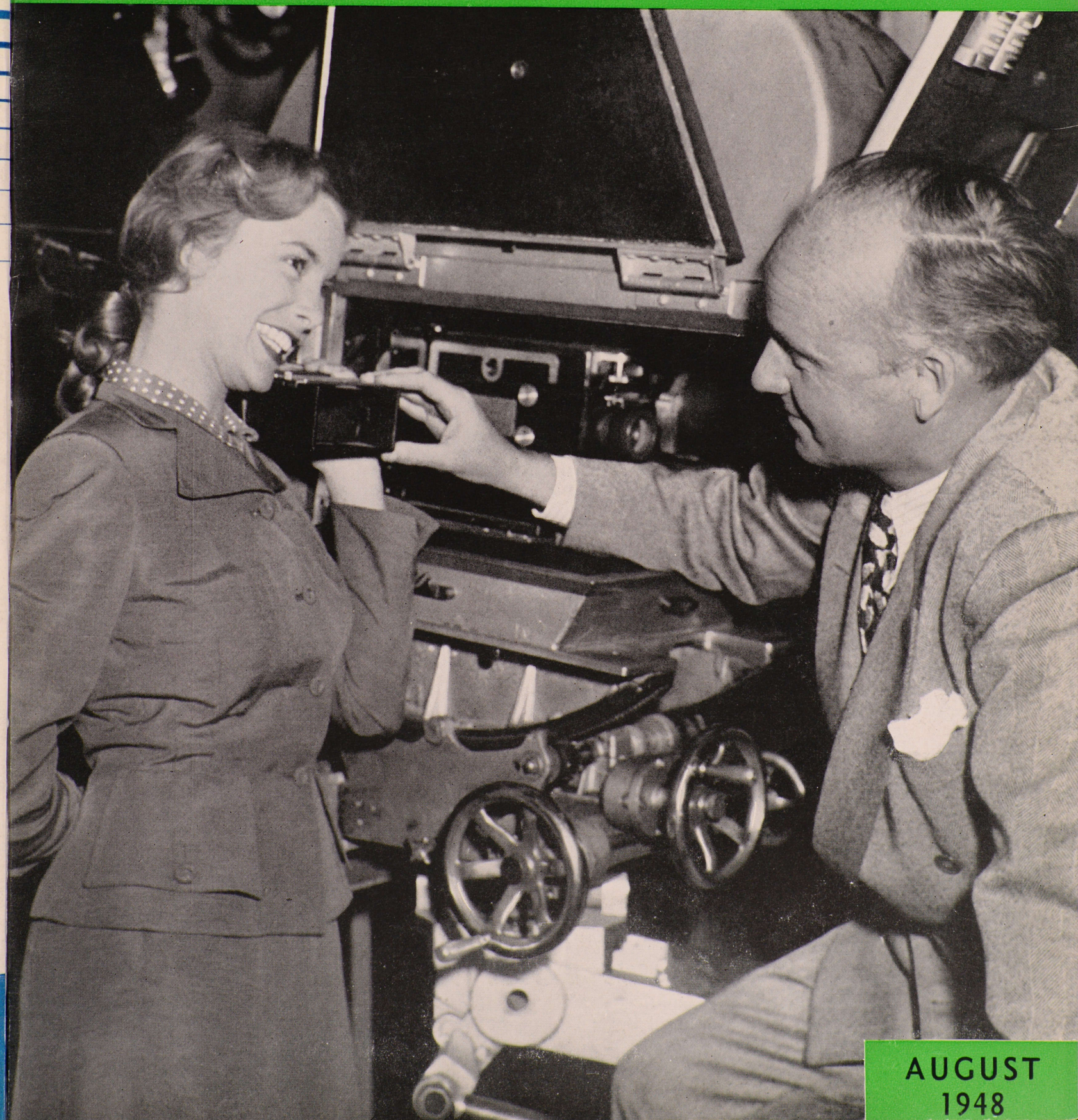


# AMERICAN *Cinematographer*

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY

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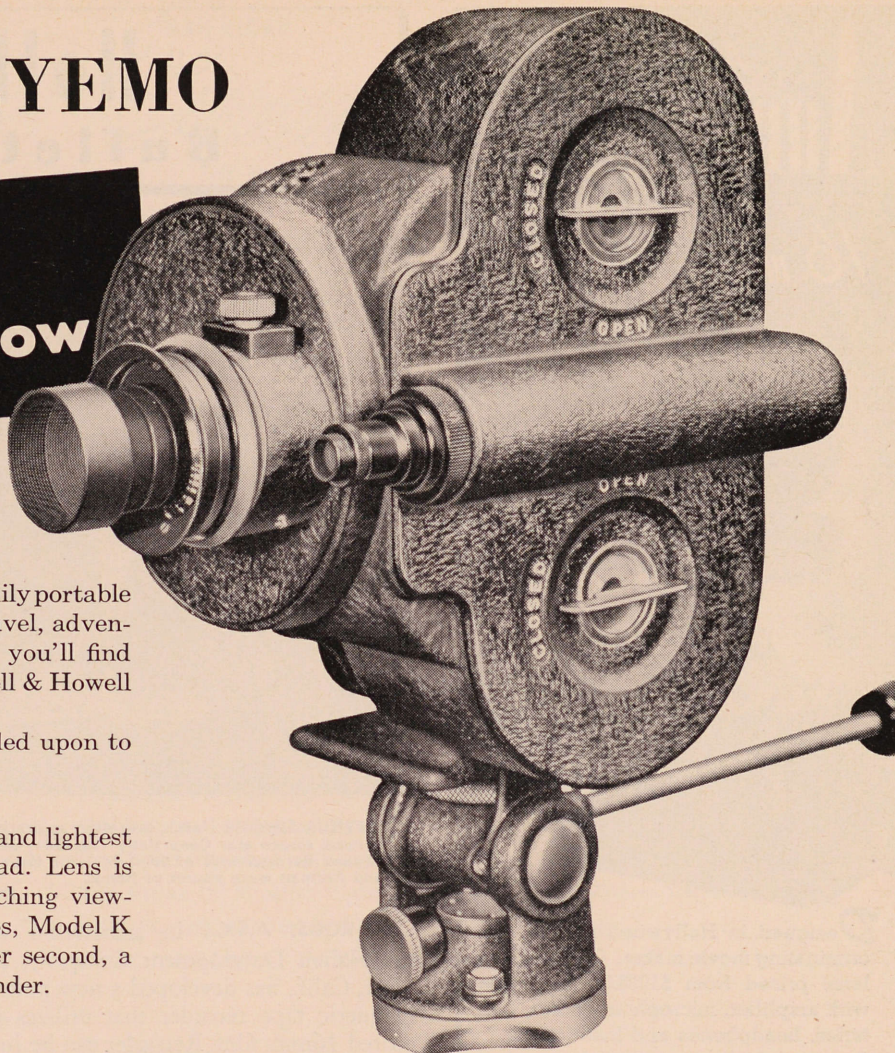
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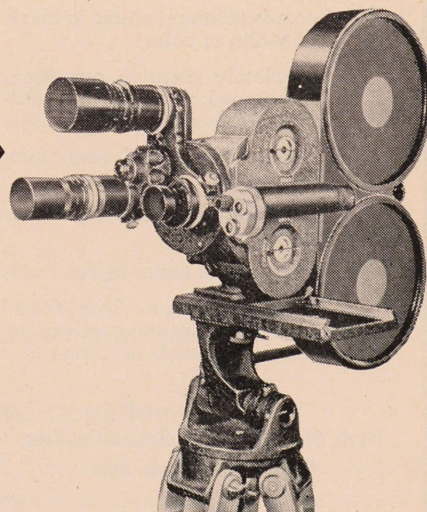
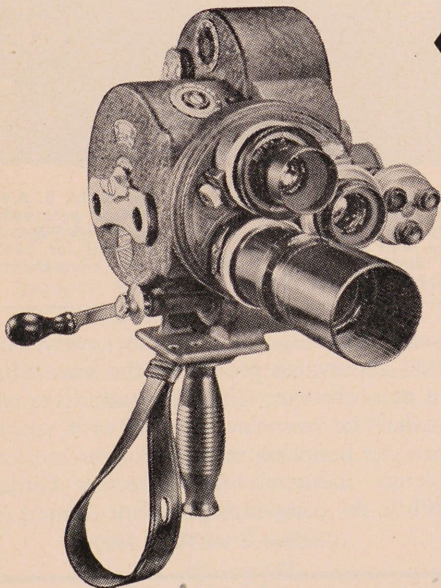
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# Hollywood Bulletin Board



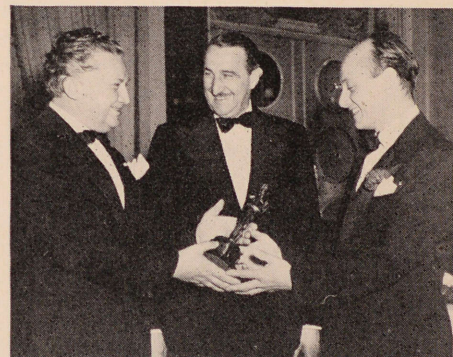
ARTHUR EDESON (left), presiding as president pro tem at the A.S.C.'s. July banquet and meeting, corners screen star Gene Kelly (seated), director George Sidney, Bob Planck, A.S.C., and producer Pandro Berman—all of M-G-M—for their signatures in the Society's guest book. Kelly, Sidney and Berman were guests of honor.

**LEN ROOS, A.S.C.**, in association with the Hallen Development Company, Burbank, Calif., has developed a new portable magnetic tape recorder that utilizes flux coated 16mm. film. Recorder can be interlocked with 35mm. or 16mm. sound cameras for recording sound, and provides a sound track that can be immediately played back. This feature also makes the recorder particularly useful for television newscasting. Recorder mechanism is gear driven and will remain in synchronization with any motion picture camera equipped with a synchronous drive.

**TOM TUTWILER, A.S.C.**, in Nome, Alaska, on an aerial shooting assignment for Apex pictures, has been grounded the past several weeks because of bad weather. Earlier, he had been in Greenland for the same company. Regarding the footage he shot there, Harry Poppe, of Apex, recently wrote Tutwiler "Yesterday we ran off two and a half reels of the film you shot. Believe me, it is the most profound, awe-inspiring and beautiful material of its kind I have ever seen on the screen."

Tutwiler has still about two months of "air stuff" to do in Nome, then goes into a ground picture elsewhere in Alaska. He reports he's "booked solid" until about arch, 1949.

**HYPERSENSITIZING** its film has enabled Cinecolor to reduce production costs of films made in that medium, so that



JEAN HERSHOLT, Pres. of Academy of M. P. Arts & Sciences, on recent visit to England personally presented Jack Cardiff, A.S.C. (right) with "Oscar" he won for best color cinematography for 1947 ("Black Narcissus"). On hand to congratulate Cardiff was J. Arthur Rank (center).

today shooting in Cinecolor costs but 10% more than producing the same film in monochrome. Cinecolor executives revealed the new development at a recent banquet honoring members of the motion picture industry's Art Directors Guild. While the company's president refused to

*(Continued on Page 289)*

## IN MEMORIAM

David Wark Griffith

in appreciation for his great contributions to the art and advancement of cinematography.

THE AMERICAN SOCIETY OF  
CINEMATOPHAGERS



... credit the  
man, too.

IT IS POSSIBLE, we believe, for cinemagoers to want to know who photographed a motion picture, just as they are also interested in who directed it. For just as they have come to know that the name of Hitchcock on a picture means guaranteed entertainment, many also know that certain Directors of Photography have well established reputations for imparting extraordinary pictorial quality to a picture.

Whether or not the time will come when the Director of Photography's name will receive equal billing in reviews, in advertisements and on billboards, we do not know; but it seems that there is every justification for film critics to give more than passing recognition to the artistry of the Director of Photography when writing the review of a picture.

A case in point is "Fort Apache," which is chiefly notable for its unusual dramatic photography by Archie Stout, A.S.C. Recently, motion picture critics on the New York dailies in reviewing this picture acclaimed the photography but omitted mentioning Stout's name, although names of the producer, writer, stars and the director came in for the usual comment.

One of the dominant aims of the A.S.C.'s public relations department, henceforth, will be to make the members of the fourth estate as conscious of the artist behind the camera as they are of the camera itself.



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### ON THE COVER

DURING a lull in the shooting of "Act of Violence," at Metro-Goldwyn-Mayer studios, Bob Surtees, A.S.C., chats with Janet Leigh, star of the picture and one of M-G-M's brighter luminaries. Surtee's story on the many unusual production angles of the film begins on page 268 of this issue.

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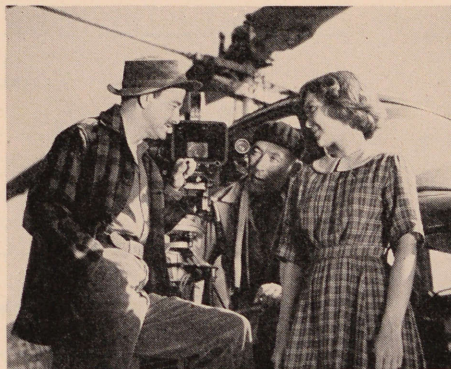
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## Keeping up with

# PHOTOGRAPHY



PAUL IVANO, A.S.C. chats with Lew Ayres and Jane Wyman, stars of W-B's "Johnny Belinda," before going aloft in helicopter for unusual angle shots for picture.

## Helicopter Shots

For the first time in the history of the company, Warner Bros. used a helicopter for mass and establishing shots for "Johnny Belinda," Jane Wyman-Lew Ayres starring picture.

Director Jean Negulesco employed a helicopter pilot and cameraman to fly over the towns of Ft. Bragg and Mendocino, California. Ex-army pilot Knut Flint, who had much experience in making rescues with a helicopter during the war, was at the controls while Paul Ivano manned the camera. Dipping into the streets, market-places and outlying sections of the two towns as their residents went about their normal business. Negulesco thus brought to the screen an entirely new approach to film making.

By using the helicopter, crew members were able to dispense with countless parallel set-ups, the name given the huge towers from which cameras are usually trained. Less static than the old method of photographing large mass scenes, use of the camera-mounted helicopter enabled Negulesco to follow moving shots at will and in addition to "freeze" the camera at any height at 10 feet or more.

In the opening scene of the film Director Negulesco wanted to establish the point that the locale of the story was a cliff-lined island. The helicopter simplified his problem. Ivano and Flint followed the course of a wave into shore. Then as the helicopter neared the cliff-lined beach the plane rose to the top of the cliff, catching the whole action on film. In another sequence Ivano and Flint hovered above a small fleet of fishing boats as they came into Noyo Harbor near Ft. Bragg. The cameraman on the docks picked up the action of the boats as they dropped anchor. Most of the scenes were shot in

altitudes ranging from 2500 feet to a few feet from the ground.

Framing shots from a flying helicopter necessitated a special stabilizer on the plane to maintain perfect balance. Flint, although used to flying airplanes, found that piloting a cameraman presented new problems. It took some practice before Flint could turn, rise or drop when cameraman Ivano required it. However, with patience the men became an expert team.

The ability of a helicopter to fly backwards and gain altitude at the same time was employed in photographing the final scene of "Johnny Belinda." The scene is a traveling shot showing a buggy being driven along the rugged coastline. The camera pulled back and up going out to sea. The buggy receded further and further in the distance leaving as a final impression only a small segment of earth on which the story was played.

## Photosensitive Glass

A technical article descriptive of the development, characteristics, and applications of photosensitive glass appears in the July 1948 issue of the PSA Journal. The author is Dr. S. D. Stookey, research chemist, Corning Glass Works, Corning, N. Y.

Photosensitive glass is described as an optically homogeneous medium having the properties of typical clear glass, yet capable of incorporating a photographic image after exposure to ultraviolet light and to heat. Controlled colors of images include red, yellow, blue, purple, and amber.

Applications are found in the fields of portrait and scenic photography, jewelry, murals, windows, optical instruments, instrument dials, lantern slides, sound tracks, and lighting devices.

## Color Expert Honored

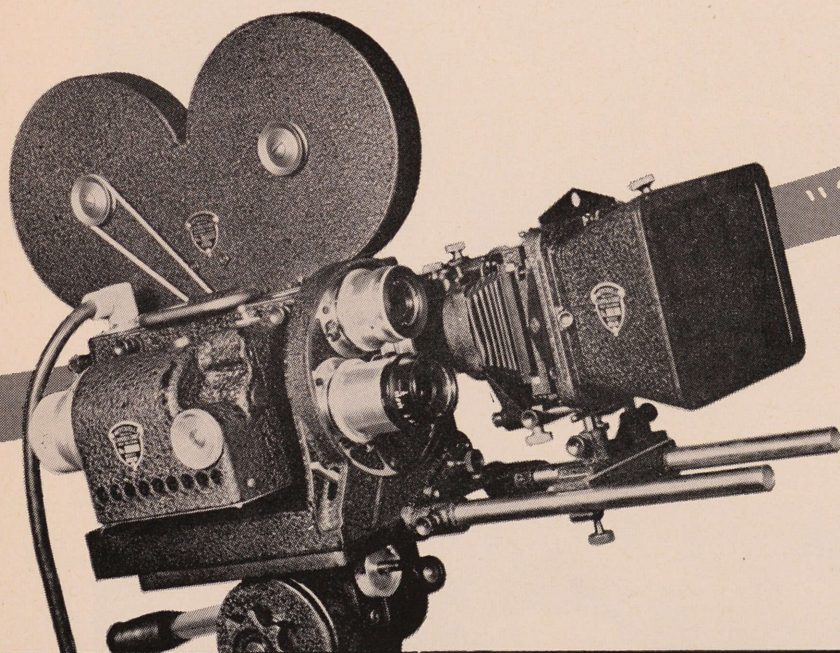
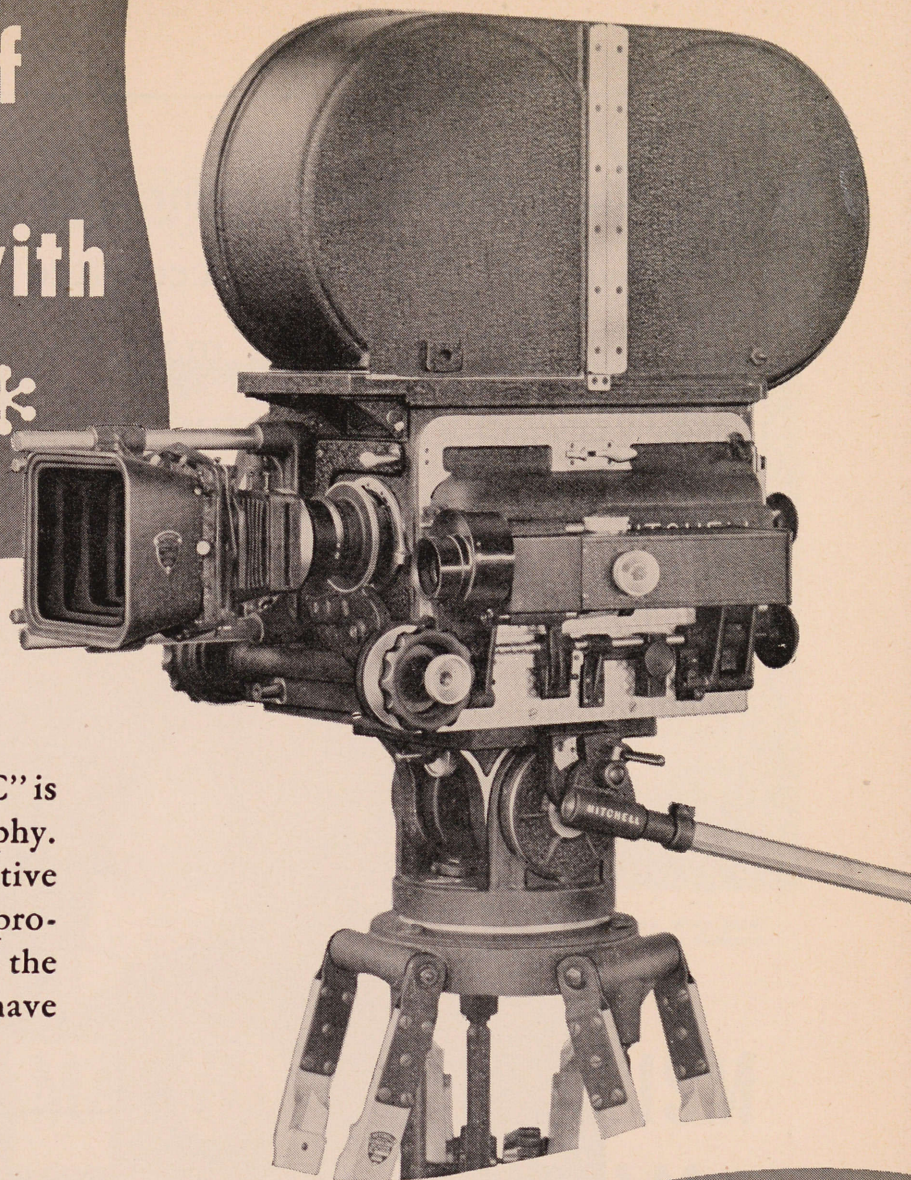
For his research on photographic dyes Dr. Leslie G. S. Brooker, Kodak Research Laboratories, has received the 1946 Henderson Award of the Royal Photographic Society of Great Britain. Dr. Brooker, who is the fourth Kodak scientist in Rochester to win the award.

His discovery of a large variety of sensitizing dyes brought a tremendous change in photography. Production of an improved panchromatic film was possible. Film could be made with almost any type of special sensitivity.. Dr. Brooker's research made Kodachrome film possible because it provided the dyes for sensitizing various layers in color films. ★ ★ ☆



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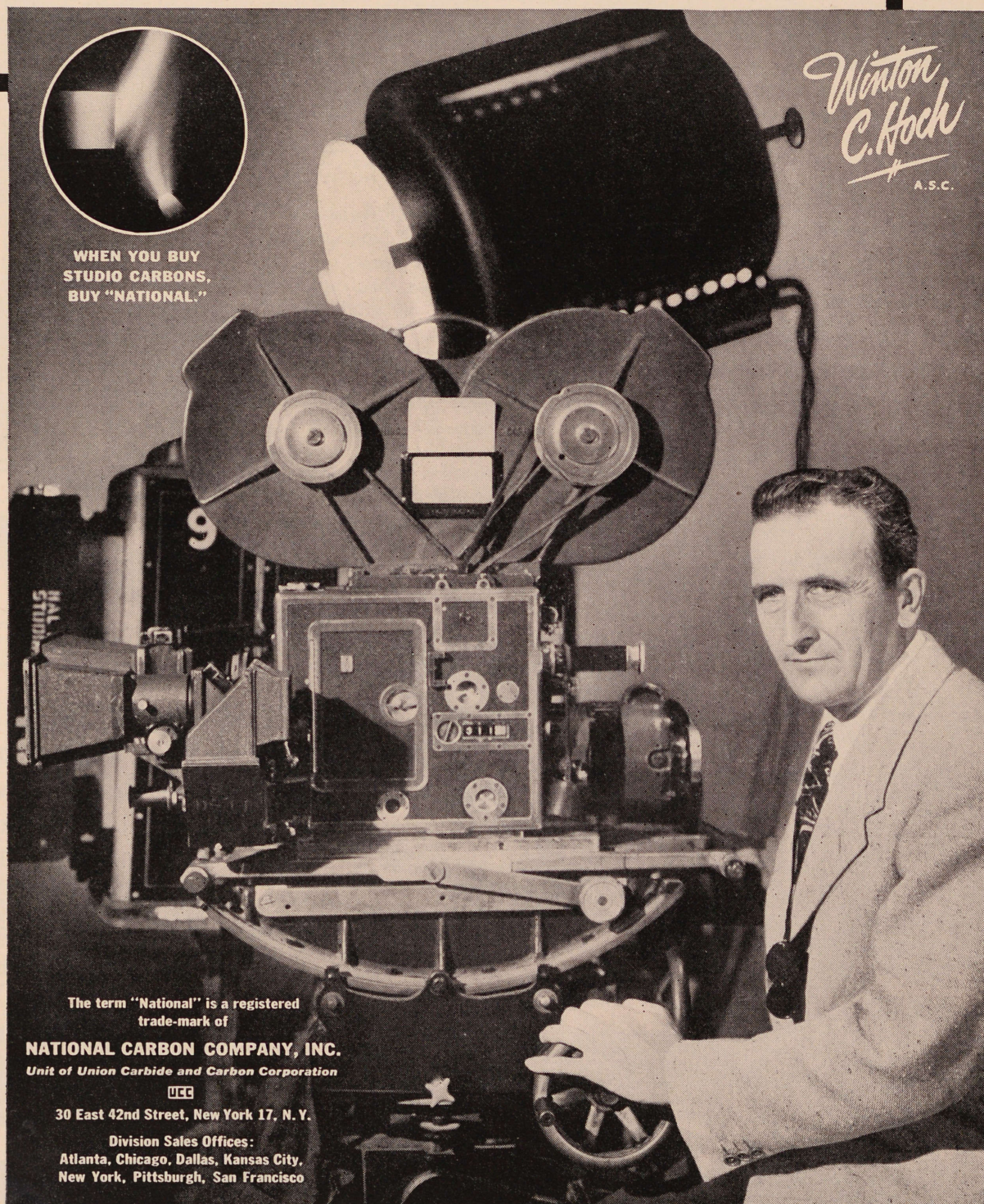
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TWO SCENES from "Fort Apache," produced by Argosy Pictures, which demonstrate the striking pictorial effects achieved by use of infrared



film and filters. All dramatic night shots in the picture were made with this film. Brown makeup and lipstick were used in the closeups.

THE NATION'S movie critics who have been so generous with praise for the photography in "Fort Apache," and the millions of cinemagoers who have seen the film to date probably do not know that a total of 10,000 feet of infrared film went into making the dramatic outdoor sequences that mark the picture.

In all probability there is more actual infrared footage in "Fort Apache," (2,800 feet in the final cutting) than in any other theatrical production released to date.

The uses for infrared film are as varied as the types of present day pictures. It affords the progressive cinematographer many opportunities to achieve striking dramatic and pictorial effect shots that can be made in no other way. At the same time, it permits carrying on smooth continuity of photography by using the same film in medium and closeup shots.

John Ford's "Fort Apache," with so much of its action laid in the pictorially beautiful region of the great southwest, was particularly suited to the use of infrared film. The vast expanse of blue, cloud-flecked sky, when emphasized by use of this film and filters, provides a dramatic backdrop for the story's teeming action.

Normally, I found that the most advantageous light conditions for shooting infrared is a cross or slightly front cross light, using a stop of  $f/5.6$  to  $f/8$  and a 25A filter. Of course, this is not a definite

## DRAMATIC PICTORIALISM WITH INFRARED FILM

**Archie Stout, who filmed "Fort Apache," tells how infrared made possible the unusual dramatic day and night shots which feature the picture.**

By ARCHIE STOUT, A.S.C.

rule, but will give a working start that your test box can prove or disprove in ten minutes, and result in making corrections to suit one's needs.

It may be interesting to note that the dawn sequence in "Fort Apache" in which the troops are seen moving across the desert was shot while a light rain was in progress, using a 29F filter and a stop of  $f/3$ , indicating that the film is not restricted to use only in brilliant sunshine.

Probably the reason more Directors of Photography have not used infrared film more often is the fact that much of the first infrared was marked by unstable balance. For example, two rolls of early day infrared film shot at the same  $f$ / stop and under the same conditions—and within

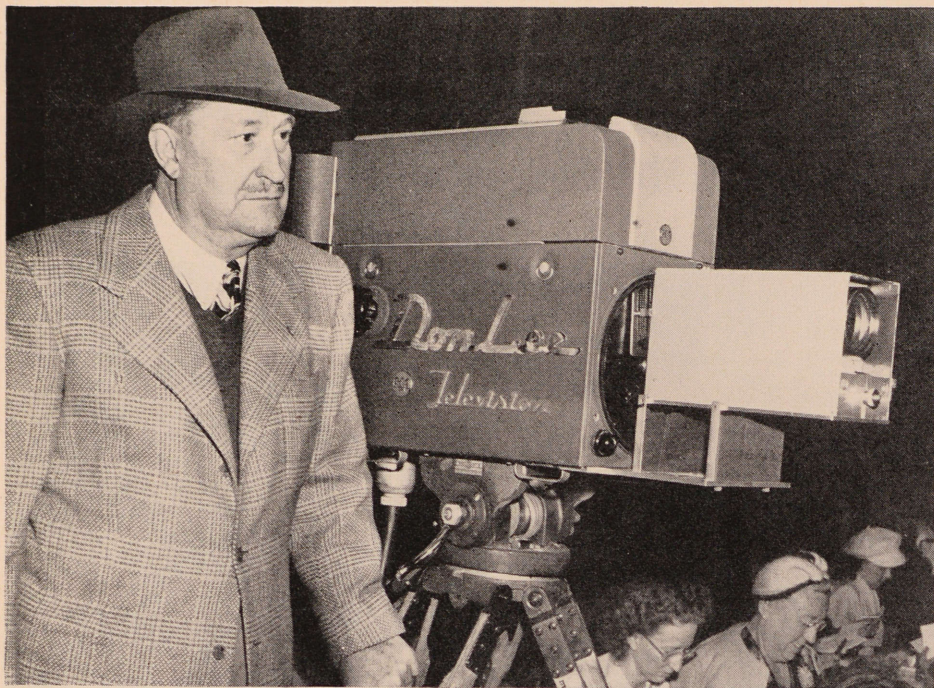
an hour—would have a very wide difference in density; so much so, that they would be practically unusable. Such hazards do not prevail with present day infrared film. The density of the 10,000 feet used in "Fort Apache" remained quite constant throughout.

Other cinematographers may be interested in pertinent facts concerning this far too little used film stock, some of which were obtained only after considerable trial and error:

In shooting closeups in which players appear, a very light brown makeup should be used in combination with dark brown rouge for the lips, instead of the customary red. The brown makeup prevents

(Continued on Page 289)





JOE WALKER, recently dubbed the "inventigest" cameraman in the motion picture industry, has come up with another lens innovation, this time for television cameras. Shown here, mounted before one of Don Lee's tele-cameras, the lens affords dissolves or quick cuts between two image sizes.

# TRANSITION LENS FOR TELEVISION CAMERAS

**The Duomar lens, developed by Joseph Walker, A.S.C., enables television cameras to make quick cuts from long shots to closeups.**

By FREDERICK FOSTER

**B**EFORE we tell you about the new Walker "Duomar" lens for television cameras, perhaps we ought to tell something about its inventor, Joseph Walker, A.S.C.

His various patent applications in the fields of optics and electronics take up sizeable file space in Uncle Sam's Patent Office in Washington, D.C. Walker has many patents on motion picture processes and equipment, but ruefully admits that only one ever brought him any real money. That was the patent covering a double exposure process using an imbibition print to form a travelling matt.

He also designed what was probably the first "zoom" lens for motion picture cameras in the early 1920's, although the term "zoom," as applied to lenses of this

type today, did not come into general use until sometime later. The European type zoom lens did not appear until many years afterward.

The Duomar is of different construction than the zoom type lens. It is essentially a lens with two fields of view, with the transition from one size image to the other being accomplished by simply moving a lever.

With customary modesty, Walker refuses to take all the credit for the idea for such a lens. The idea, he says, stemmed from a query posed by John H. Buffum, now a well known Boston radio commentator, in whose employ he worked as a newsreel cameraman many years ago.

"Joe," said Buffum, "I want you to develop something that will permit making

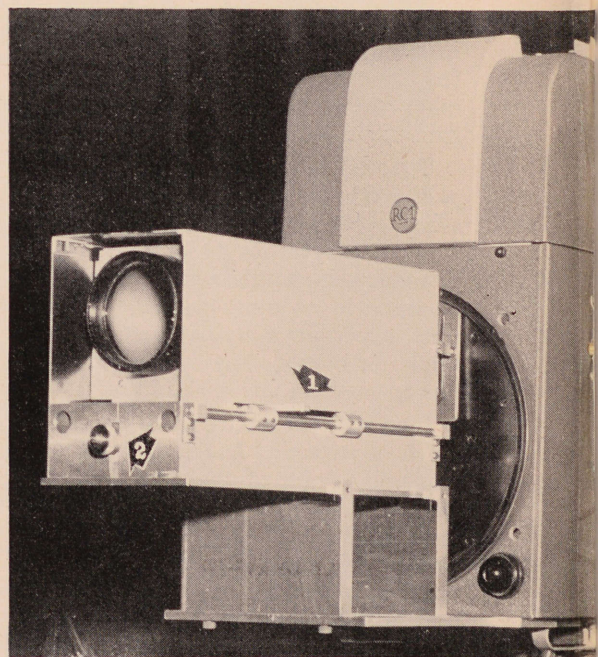
a quick switch from a long shot to a closeup, and vice versa — perhaps two cameras and lenses in a single unit, or better yet, two lenses of different focal length mounted on the same camera with some means of instantly changing from one lens to the other without stopping the camera."

Walker was using a Williamson camera at the time and he soon had a method figured out that would achieve the result suggested by Buffum. The camera featured an extra long aperture plate and film gate. Walker cut an extra aperture in the plate and fitted a telephoto lens immediately above the regular camera lens, so that it would register an image on the film two frames above that of the regular lens. A sliding shutter was installed in the camera so that the aperture behind one lens could be closed simultaneously as the other was opened.

Thus to make a quick switch from a long shot to a closeup, a button was pressed as the cameraman continued cranking, and the sliding shutter cut off the image from the short focal lens and opened the aperture behind the telephoto lens, permitting it to register an image on the film. The resulting blank frame between the switchover (or the single double-exposed frame, resulting when the switch was from closeup to long shot), was deleted at time of editing the film.

Walker had the first opportunity to put this idea to practical use when filming newsreel shots of President Wilson's inauguration. The event was a natural for demonstrating the effectiveness of this new cinematic innovation. Walker had his regular lens focused on the President

(Continued on Page 287)



**TRANSITION** is effected by moving lever (indicated by arrow 1) on side of lens. Manual operation is soon to be replaced by electric remote control. Centering knob (arrow 2) affords adjustment of lens so it will automatically center on subject or scene when switched from long shot to closeup.



# THE NEW "SPECTRA" MEASURES COLOR TEMPERATURE

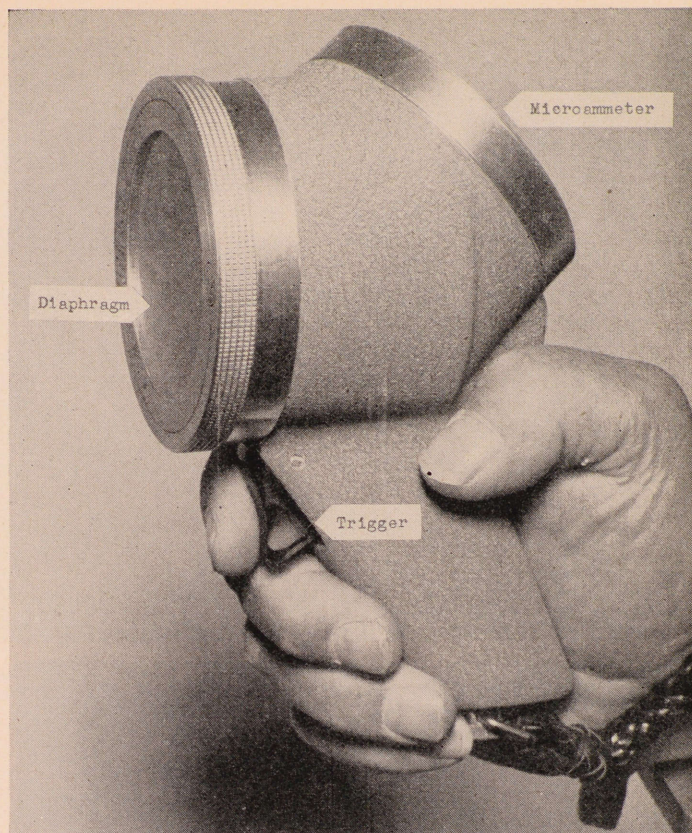
**A radically new direct-reading color temperature meter, developed by Karl Freund, A.S.C., takes the guess work out of light analysis.**

By FRED GATELY

**A** NEW STAR has been born in the photographic firmament—one whose destiny is to remove the final vestiges of guess work and mental gymnastics from the art of color photography. It is the Spectra, a direct-reading color temperature meter, designed and built by Karl Freund, A.S.C., and his Photo Research Corporation.

The term "color temperature" will do doubt imbue many with the feeling that we are dealing with an esoteric subject in the realm of physics. In the lexicon of the scientist, color temperature of a given source is the temperature to which a radiant black body must be raised to radiate the same spectral distribution of light. For the physicist who must deal with specifics this is a necessary definition; from the practical standpoint of the photographer who must deal with the color temperature problem as a routine phase of his work, it resolves itself down to "how yellow or how blue is my light?"

The synthesis of light is readily apparent in its wide variations to any observant individual. We have all noticed the distinctly red color of the sun either very early in the morning when it is rising or when it is about to set in the evening, and

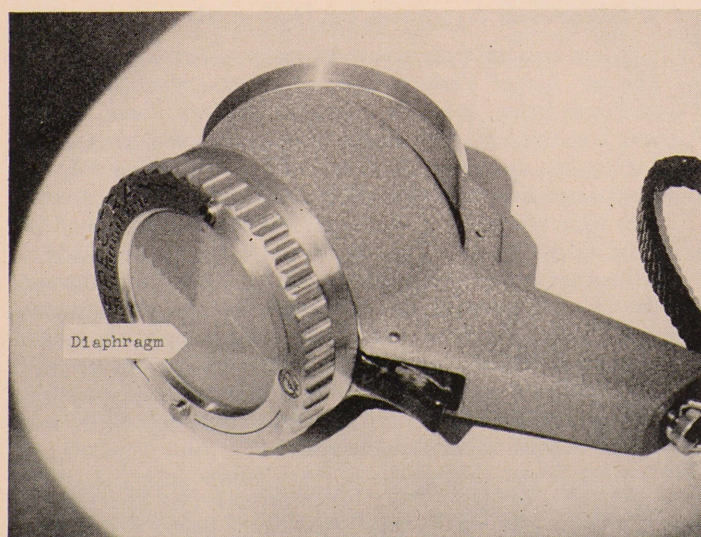


**THE SPECTRA** is used in the same manner as an incident light meter. It is merely a matter of pointing meter toward light source being examined, adjusting the diaphragm to the reference marker, squeezing the trigger, and taking the reading directly from the microammeter scale.

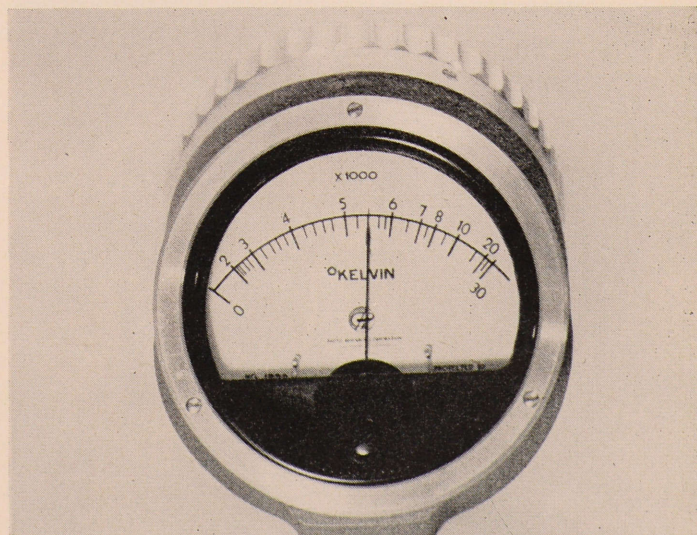
have seen how objects illuminated by the sun at that time have a distinctly reddish cast. We have observed a candle burning in a room illuminated by standard tungsten lamps, and accept as a natural thing that the candle seems yellow by comparison and, in turn, that the tungsten lamp will seem yellow in comparison with daylight if it be turned on in a room illuminated by windows. The tungsten lamp gives a light having a higher percentage of blue rays than candlelight, and the daylight has a higher percentage of blue rays than the tungsten.

In a thermal source the relative amounts of all wave lengths

*(Continued on Page 278)*

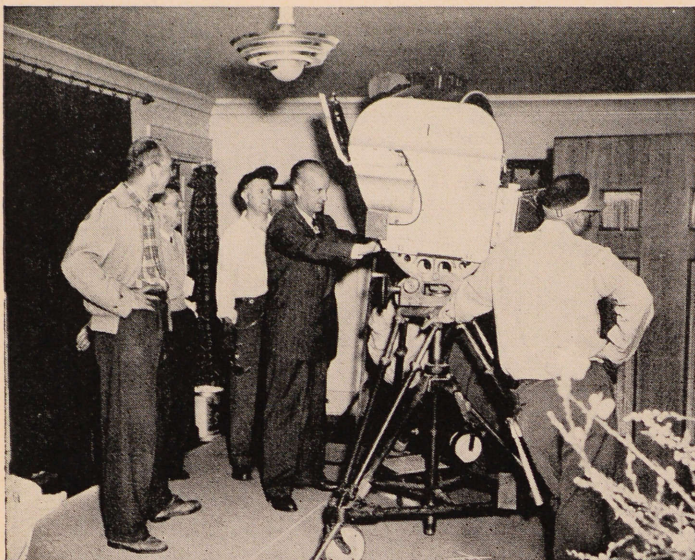


**A RED FILTER** rests between the diaphragm and the photocell. Initial setting of meter indicator is based on red light rays passing through red filter to photocell. When trigger is squeezed, blue filter replaces red and the light thus admitted to photocell becomes the ratio between the blue and the red.

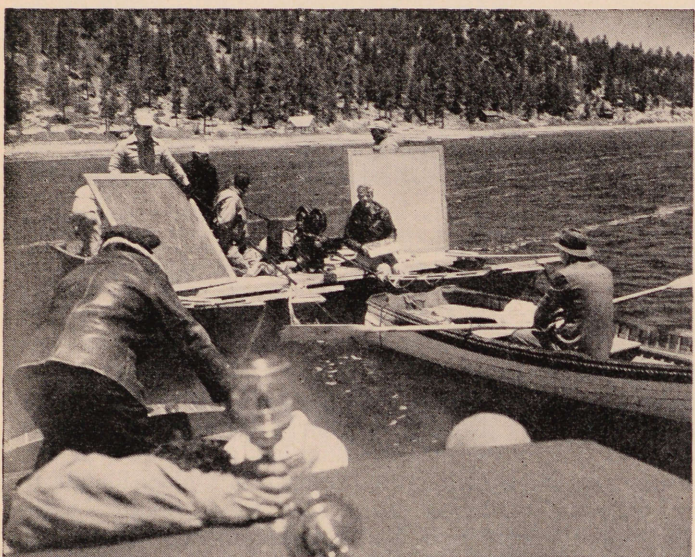


**AFTER METER** is pointed toward the light, diaphragm is adjusted until indicator needle rests on reference marker, as shown here. When trigger is squeezed, needle will move to left or right, depending on the color temperature, giving a direct reading. No additional calculations are necessary.





ONE OF THE many "sets" used in "Act Of Violence" was the interior of this dwelling in Santa Monica. Here Director of Photography Surtees lines up his camera for a shot through the front door.



FOR A FOLLOW shot of Robert Ryan rowing a boat, two boats were lashed together and a platform laid over them to support camera and crew. An outboard motor supplied the motive power.



NOTE THE NATURALNESS of the background lighting in this shot, which was supplied by several photoflood lamps mounted on distant telegraph poles—some as far as a block away—one of the many Surtees lighting innovations.

## ***The Story of Filming***

# **'ACT OF VIOLENCE'**

**Reflected lighting, no makeup, natural locations and use of a 28mm. lens for all shots are some of the new production trends explored in the making of this picture.**

By ROBERT SURTEES, A.S.C.

**M**UCH HAS been written lately about the trend towards realism in the photographic treatment of the modern "documentary type" motion picture play. Therefore it was with anticipation of doing something unusual and different that I faced the assignment of photographing the Metro-Goldwyn-Mayer production, "Act of Violence." Here was a cameraman's picture, an ideal story written by Robert Richards in such a manner that the Director of Photography could blend the best of the documentary technique with a more dramatic approach than has been possible in other pictures to date.

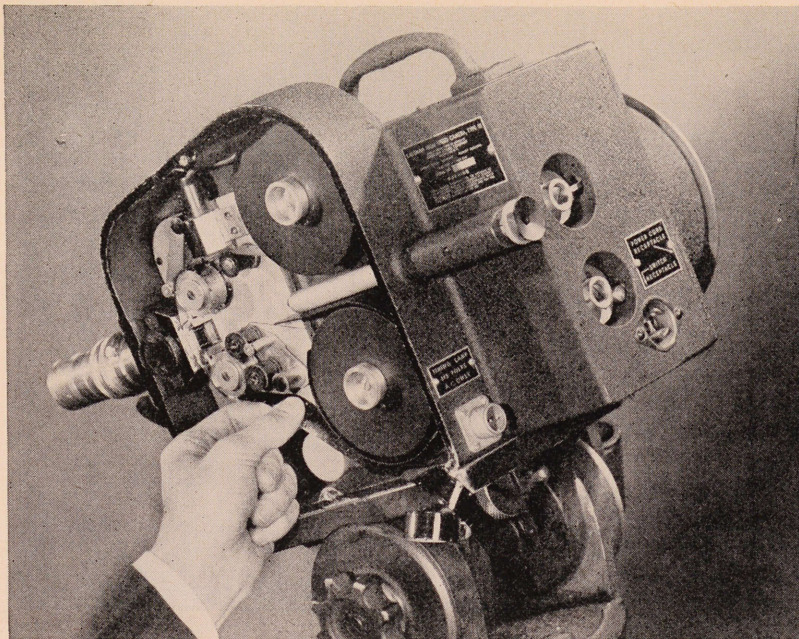
This story was real and at the same time more dramatic than the usual so-called modern film. It was the one great opportunity to go beyond the realist school and combine it with a more imaginative treatment. The producer, Mr. William Wright, and the director, Mr. Fred Zinnemann, were a constant and sympathetic pair to be associated with in this unusual experiment for Hollywood.

To understand fully one must know something about the plot of "Act of Violence." Briefly, it concerns the pursuit of Frank Enley, a former officer in the Air Force, (Enley was portrayed by Van Heflin), by a crippled ex-sergeant, Joe Jordan, (played by Robert Ryan). Jordan has only one purpose to live for and that is to kill Enley, because while they were prisoners of war together Enley had informed the Nazi Commandant of an escape planned by his buddies. All except Jordan had been shot in trying to carry through the plan. Jordan escapes and, after the war, starts searching for Enley who is now living as a respectable citizen in a small California city. Jordan finally catches up with him in Los Angeles and the hunted one escapes to hide among the derelicts of dead end streets like East Fifth, with all its human wrecks and winos.

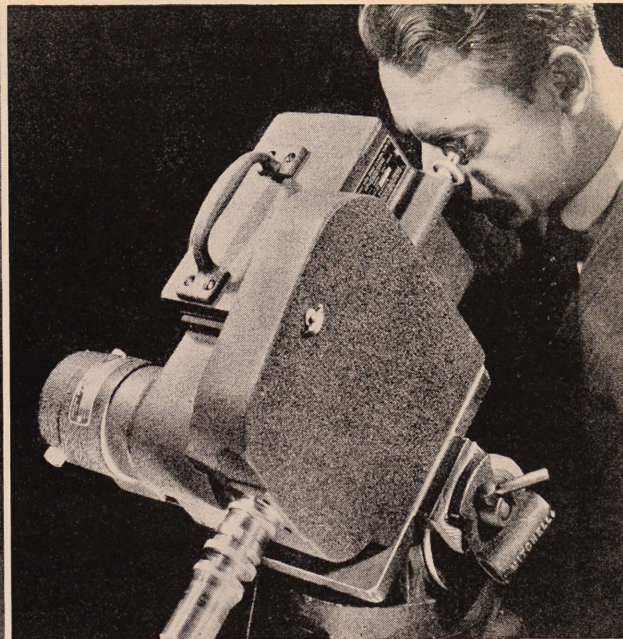
During all this, Enley knows he did wrong and also knows his number is about up, and in a surprise twist at the finish of the story he saves the life of Jordan and, in doing so, loses his own. All this action was staged in and around Los Angeles and was mostly night exteriors

*(Continued on Page 282)*





THE SIDE of the Kodak High-Speed Camera opens in this manner for threading. A 1/5-h.p., 32 volt universal motor is used to drive the film-moving mechanism, optical plate, and takeup spool.



COMPACT IN SIZE and weighing only 32 pounds, the new Kodak High-Speed camera may be used in making motion pictures at speeds from 1000 to 3000 frames per second.

**S**EVENTY odd years ago Leland Stanford engaged a San Francisco photographer to make a series of pictures which would conclusively answer the question of whether or not a galloping horse always kept one foot on the ground.

Quite possibly neither Stanford himself nor Eadward Muybridge, the photographer, realized the significance of the project. In Stanford's case, certainly, it is known to have arisen from a wager, reportedly \$25,000 in California gold. But the fact remains that the Muybridge pictures represent what was perhaps the first extensive use of the camera to observe motion too fast for the eye to follow.

In making his pictures, Muybridge set up a row of 24 cameras. Their shutters were tripped by means of strings, broken by the horse as it galloped past. Despite the primitive nature of this set up, Muybridge's photographs proved beyond question that at one stage of a gallop all four hoofs are off the ground.

Muybridge's fundamental problem was one of synchronization. A similar problem exists today in making still pictures of fast moving objects. It was in part to solve this problem that the Eastman Kodak Company developed the first ultra-speed motion picture camera 16 years ago. This was the forerunner of today's Kodak High Speed Camera, widely used in industry, engineering, and research.

Such a camera, operated at speeds of 1000 to 3000 frames per second, provides a picture sequence in which a given moment of time is bracketed. Not only is a visible record obtained of action at a

## 3000 Frames Per Second!

**E-K's new high speed camera employs non-intermittent film moving system; will focus down to 11¾ inches; takes 100 ft. spools of 16mm. film.**

particular moment, but a record also exists of what preceded or followed that action. Projected at 16 frames per second, films shot at 3000 frames per second effectively "slow" the action pictured by 187 times. This is as if a streamliner traveling 60 miles per hour were slowed to a speed of something less than 6 inches a second.

At picture frequencies of this order, intermittent film movement is not feasible. As a result, the Kodak High Speed Camera employs a non-intermittent film moving system: the film is drawn continuously through the film gate by means of two sprockets. Since the image must remain stationary during exposure, a rotating optical plate is mounted between the lens and the film. This is geared to the film-moving mechanism and moves the image in synchronization with the moving film. End pieces at each end of this plate serve as framers and shutter.

Either of two specially designed lenses

may be used with the camera, a 63mm. f/2.7 Kodak Anastigmat or a 102mm. f/2.7 Kodak Anastigmat. The former, normally supplied with the camera for general use, may be focused on objects as close as 11¾ inches. At this setting field size measures 1⅓ inches by 1 inch.

A ground-surface focusing leader is provided for insertion in the film gate, permitting accurate focusing through the eyepiece at the rear of the camera. Once the lens is focused, field size and depth of field may readily be determined. The latter is often particularly critical in work of this sort. Exposure time with the Kodak High Speed Camera equals 1/5 the reciprocal of the number of frames per second. For example, at 3000 frames per second, exposure time is 1/15,000 second. As a result, maximum lens apertures are generally used.

(Continued on Page 286)





EARLY DAY recording of music was done on the set as the picture was photographed. Here full orchestra may be seen playing accompaniment to vocalizing by Vivian Seagal, seated on park bench with co-star Alexander Gray in scene from "Viennese Nights."



TODAY, musical score or vocals are pre-recorded and the scene filmed silently, cued to playback. Here Martha Vickers and musical director Leo Forbstein pre-record a number for forthcoming "The Time, Place and The Girl."

# Music For Movies

**Composing and recording background scores is a highly specialized and rather intricate business.**

By HERB A. LIGHTMAN

**M**USIC FOR the movies was born, properly enough, on a movie set. It all began, legend tells us, when a certain putteed director found that the ex-shop-girl star of his latest epic was unable to register emotion before the cameras unless she was serenaded by the tender music of a small string orchestra playing off stage.

Be that as it may, the string ensemble soon became an integral part of movie-making, and no set was complete without one. About the same time, someone reasoned that perhaps the audience would get the point of the film story more effectively if these same musical emotions were recreated in the theatre as the film unfolded on the screen. And so, pianos were installed and the most enduring pianists were set to work interpreting movie moods in terms of music. "The Dance Of The Hours," "William Tell Overture," and "Hearts And Flowers" were melodies which seemed to fit the entire gamut of screen moods in those days.

As the idea caught on, the more affluent picture houses installed pipe organs, and it wasn't long before small orchestras were hired to accompany the action on the screen.

It was soon afterward that talking pictures became a reality, and for the first time, music literally became wedded to celluloid.

From these modest beginnings there has grown an industry within an industry, until today every motion picture studio maintains a staff of first-rate modern composers whose sole job it is to write background scores for screen drama. Producers have found that music is one of the most effective means of establishing mood, of identifying characters, of speeding up or slowing down the pace of the action, of pointing up the little subtleties that might be lost were they to depend solely upon picture and dialogue for audience reaction.

Yet, even with all of the progress that has been made in adapting music to the screen, there still exists a certain controversy regarding the role that such music should assume in relation to the action and dialogue of the photoplay. One faction maintains that music for the screen should be so subtle that the audience is never aware of its presence as such—the theory being that the emotional content of the composition will convey itself subconsciously to those view-

ing the film. The opposite school of thought argues that unless the background music asserts itself into the very action of the story, its effect is lost.

The most logical evaluation lies somewhere between the two. Music for the screen should, like any other element of production, function primarily to enhance the meaning of the story. Used intelligently, it serves as a smooth transition between sequences, provides dramatic contrast between the visual picture and the underlying idea, prepares the audience for a situation by "telegraphing" the mood, and provides an effective association of ideas for establishing characters and locales.

Although directors are loath to admit it, proper music can sometimes inject into a situation meaning that was not clearly brought out in the staging of the action. The same scene underscored by completely different musical themes can convey several opposite meanings. In any event, the music behind the scene should complement that scene and not fight with it for the attention of the audience.

It is possible to look back over the past several years and recall many excellent pictures that owe at least a part of their effectiveness to superlative musical scores.

These musical backgrounds, had they been composed as symphonies and not film scores, might have been regarded as important orchestral works worthy of performances in any concert hall. Certainly many of them reveal as much effort and talent as several classics made immortal by time alone. It yet remains for concert-goers to forget their prejudices

(Continued on Page 288)



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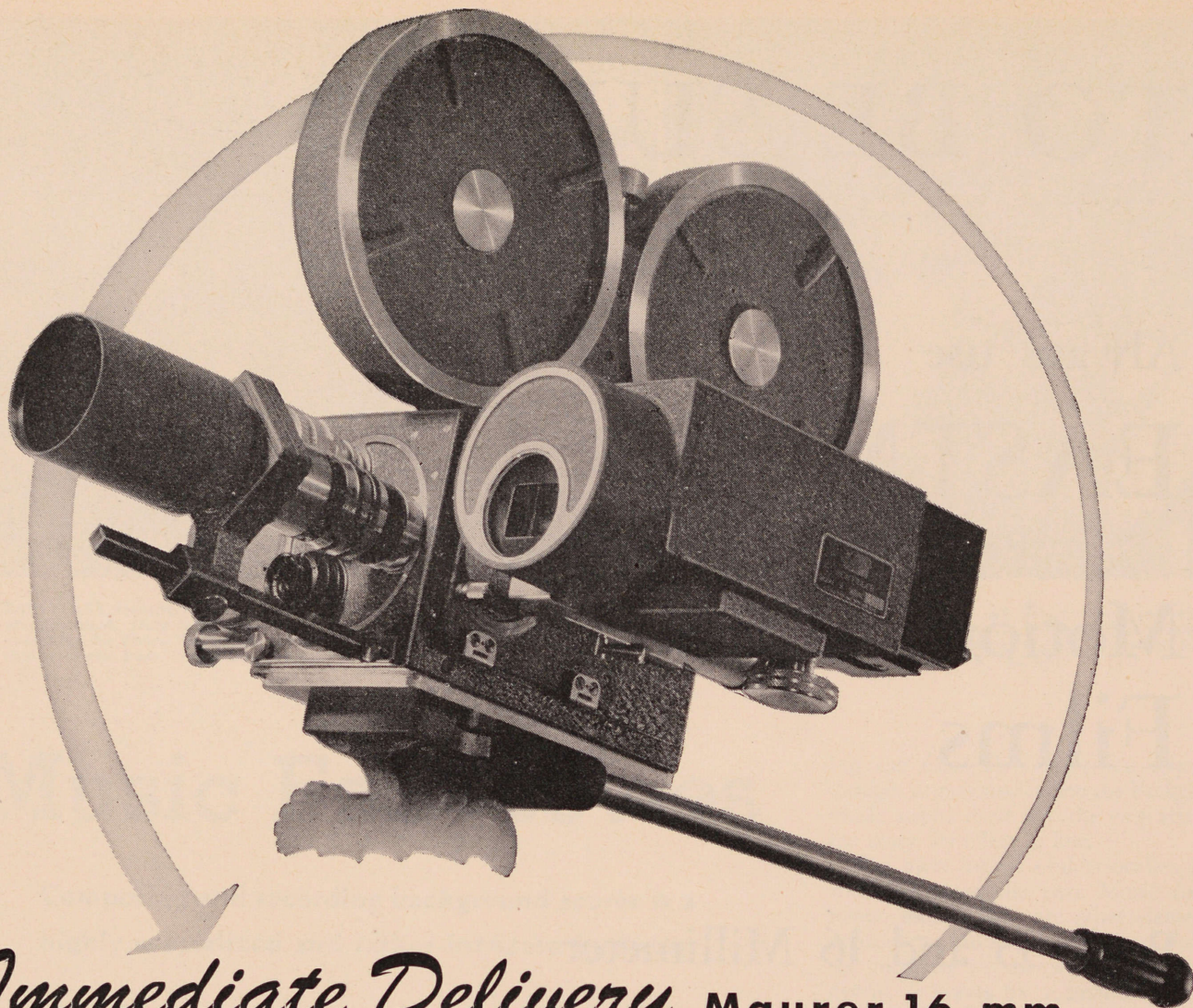
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# THE CAMERA'S POINT OF VIEW

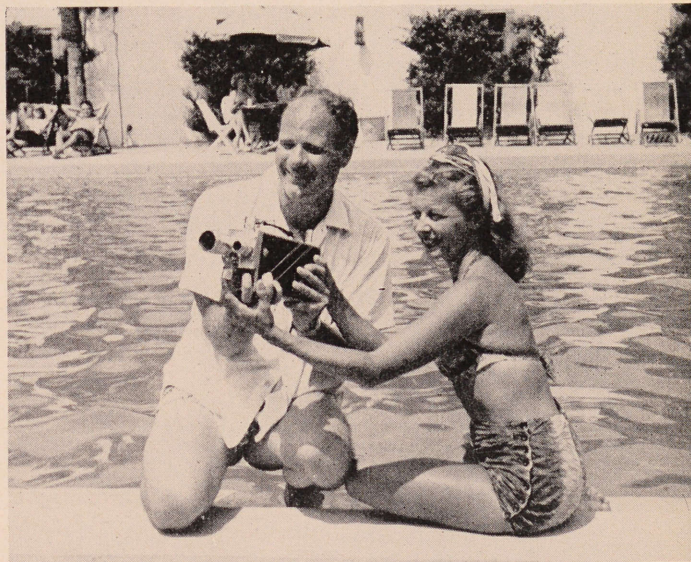
Match the viewpoint of your camera with the mood and pace of your story for a more professional finish to your movies.

By CHARLES LORING

A SPECIFIC situation will never look quite the same to two different people. Subconsciously our impressions of a scene are colored by our own past experiences, emotional make-up and alertness. In other words, each of us surveys a situation from our own personal "point-of-view."

In the same way, every cameraman—be he studio professional or home-movie hobbyist—has a different approach to filming an individual sequence. Each will look at the situation differently and tend to film it from his own viewpoint. What's more, the choice of camera angles which he employs will determine the *audience's* point-of-view in reacting to the sequence.

All of this works to the cameraman's advantage, for it allows him to get style and approach into his camera treatment.



INTERESTING angle shots feature John Mansur's 16mm. movies which are consistent award winners in Philadelphia Cinema Club contests. Lacking a tripod at the moment, Mansur makes a low angle shot of divers in action while Mrs. Mansur aids in steadying the camera.

Remember that while the cameraman sees the *entire* situation which he is filming, *the audience will see only as much of it as he frames in his view-finder*—and they will see it in terms of the perspective which his camera angles create.

Since point-of-view is so important, then, it is to the cameraman's definite advantage (even if he is only shooting scenes of the kiddies in the backyard) to sit down and do a bit of planning before he starts the camera. He should decide just what kind of mood he wants to establish, what kind of camera angles it will require, and how the camera can be used to best complement the action. This bit of planning will pay its way many times over, for it does away with the costly hit-and-miss shooting which we see so often. It will give the screen presentation a more professional finish, and—most important of all—it will tend to draw a more appreciative reaction from the audience.

The camera, depending upon its position in relation to the setting and the action, can convey many different impressions of the same scene. It is for the cameraman to decide what impression he wishes to create and then follow through accordingly. Let's take a look at some of the basic principles of camera viewpoint, and the ways in which they influence an audience's impression of a particular scene.

*The High Angle Shot:* When you look down at anything, you automatically become (in a psychological sense) superior to whatever you are viewing. If you look down from a height at a scene even as vast as the Grand Canyon, you will still experience a sense of power that comes from having the whole thing spread out before you. Subconsciously you feel that it belongs to you and that you are able to command it from your exalted position. This probably explains why political dictators invariably build their retreats on mountain-tops, and feel most powerful when haranguing the masses from a balcony.

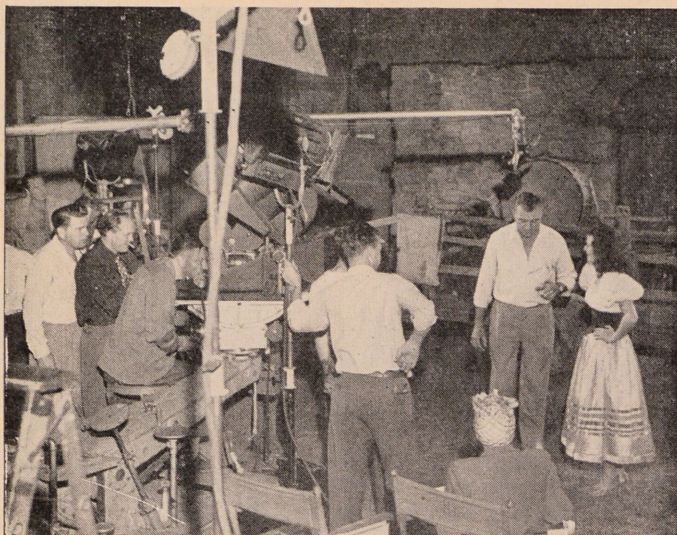
In terms of the camera, a high angle creates a very similar

(Continued on Page 284)



WITH KODACHROME film in his camera and a pola screen over the lens, Richard Thiriot, of Salt Lake City, makes a low angle shot of a copper skinned Navajo backdropped by clear blue sky, for his latest 16mm. documentary on contemporary life of the Navajo's.





ONLY INDICATION that this is a 16mm. production is the Mitchell Professional 16mm. camera revealed by the opened camera blimp. Otherwise the equipment is the same as used in average Hollywood studio productions.

THE GENERAL LIGHTING projected onto sets was tinted with colored filters to enhance pictorial quality of the thatched roofs and rugged stone exteriors.



## GRAND OPERA IN 16MM.

**How one producer found it more efficient  
and economical to make 16mm. color films  
using a 35mm. studio and its equipment.**

By ELWOOD NICHOLSON

**G**EARING production to standard 35-mm. methods and equipment, save for the 16mm. camera, Amalgamated Pictures, of Hollywood, have proved that a 16mm. color production can be produced for less money and in less time than when undertaken in the average 16mm. film studio.

The proving ground was the Hal Roach Studio in Culver City and the production a three-reel version of the opera, "I Pagliacci," which we filmed in 16mm. Commercial Kodachrome in two ten-hour working days. Obviously, this was not accomplished without considerable advanced planning, with strictest economy one of the dominant aims. Moreover, we proved that a limited budget 35mm. color production can be made more economically by shooting it in 16mm. Kodachrome, then blowing it up to 35mm. Ansco Color. Releases of this production are to be made available in both 16mm. and 35mm.

Chiefly responsible for the remarkable time-saving in production was the use of the Mitchell Professional 16mm. camera. Its light weight and compactness made maneuverability within stage space of limited area no problem. Its many features enabled us to produce, while shooting, many of the cinematic effects that usually demand costly optical printing.

Otherwise, the usual sets, lighting, etc., employed in 35mm. production, were used. One week preceding the shooting, the sets were carefully selected and erected on the sound stage. Camera angles were so planned that the camera worked within a 15-foot radius throughout the production, with the exception of one or two long shots of the village in which the action was set.

Lighting was rather a simple matter. The entire set and all backings were illuminated to an overall level of from 800 to 1200 foot candles, depending upon the color contrast required for building fronts,

the roofs, and the clouds, trees, etc. We also used projected color to enhance pictorial quality of the thatched roofs and of the buildings constructed of volcanic stone. Once the entire set was illuminated to our satisfaction, it was a simple matter to work at any camera angle by using only 6 to 10 lights around the camera.

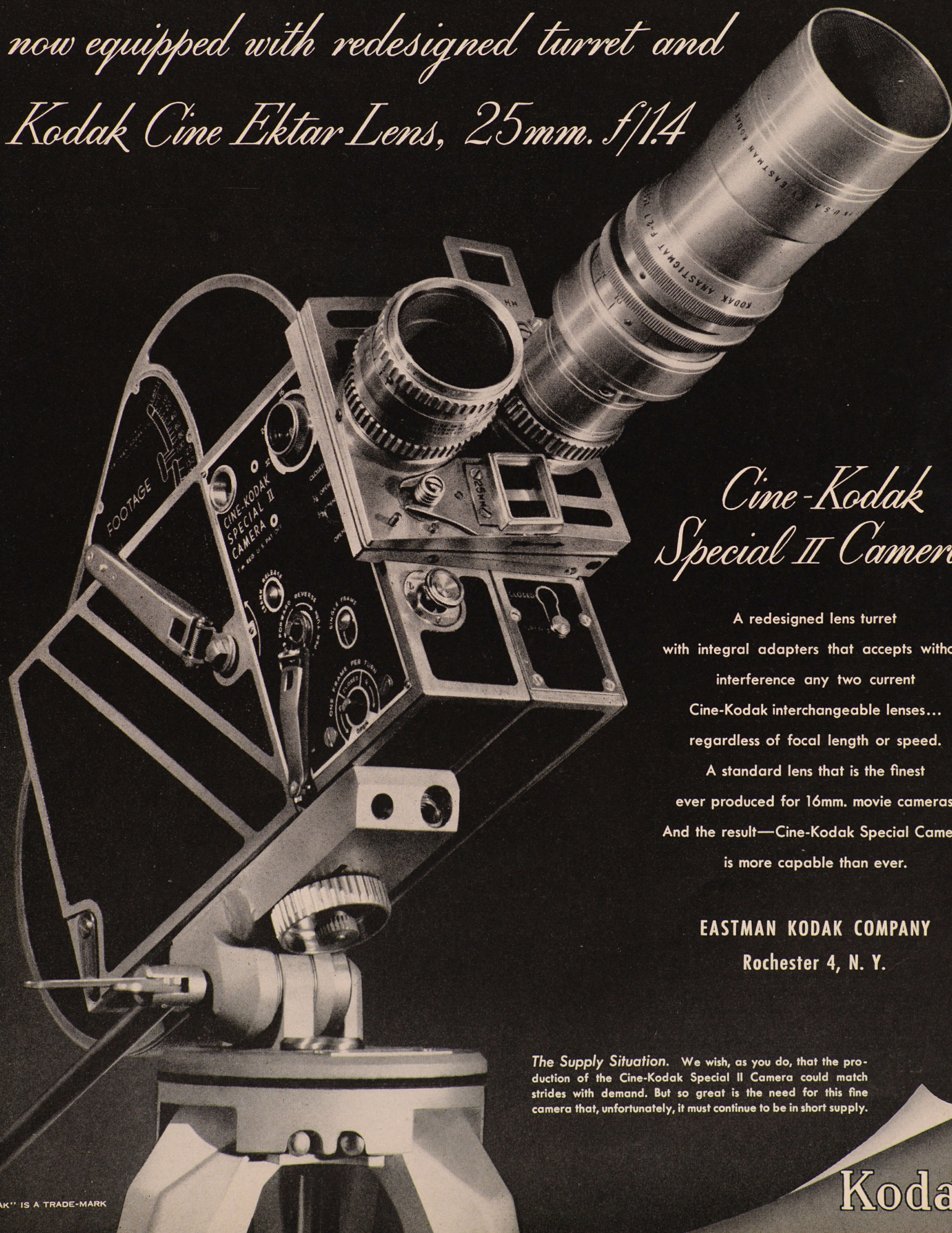
Exposures ranged from  $f/2.3$  to  $f/2.5$  depending upon the distance of the back and foregrounds. Arc lamp illumination was employed only where night effects were called for, and then incandescents were used to light the actors in the foreground. The arcs flooded the backings and buildings with light of approximately 350 foot candles in intensity, which did a beautiful job of upsetting the color balance of 3200 to 6000 K. But by using two stops under-exposure, a soft silvery sheen was imparted to the overall scene; the color rendition was more in the gray scale, and this resulted in a truer rendition of the night effect we sought.

Conceived and directed by Thomas Peluso, well known musical figure, this new treatment and presentation in color of the opera will, it is hoped, do more to place grand opera in an idiom for laymen and for those who heretofore have shunned opera as "highbrow" than any musical presentation since Mr. Peluso's "Opera Of The Air," sponsored by Union Oil Company. The condensed version of "I Pagliacci," and the others which comprise the program of 52 which are to be filmed,

(Continued on Page 288)



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**CLUB MEMBERS**, when in production on location, may be identified by attractive white sweaters bearing the club's insignia, "L. B. C. C. Productions," on the back. Here group of club's cinematographers are focussing their cameras for a shot for "Happy Landing."

## 276 August, 1948 • AMERICAN CINEMATOGRAPHER



the Skies," a national defense film produced during the war, "Happy Landing," aimed to publicize the attractions of Long Beach, and "Farmer's Daughter" and "Chicken Feathers"—both rural comedies with Keystone comedy overtones.

Aldrich says that planning these pictures is more than half the fun. The production staff usually gets together several times for discussions, after the story has been selected, and plan locations and various bits of business that will make the picture more than an ordinary movie. Then location scouting trips are made and camera positions planned, so that when the company arrives on location, everybody knows what is to be done, where the cameras are to be set up and the players what to do.

Preceding the actual starting date of each production, however, Clarence Aldrich spends considerable time in the preparation of the shooting scripts and in making the location charts. Skillfully, with his architect's pen, he plots each location and indicates on diagrams the position of the camera for each scene as well as the direction of travel of actors and vehicles taking part in each scene.

These diagrams, along with the shooting script are duplicated on his blueprinting machine to provide separate copies for each of the technicians and members of the cast, much the same as is done in Hollywood studios.

Makeup is an important consideration in every production and several club members have devoted considerable study to the subject and have produced some notable results, using standard studio techniques and makeup. Sometimes, when productions are to be shot in both black and white and color, makeup becomes a problem; but this is usually solved by happy compromise. Raymond Fosholdt, a keen student of Max Factor's techniques, was the club's first exponent of motion picture makeup and is credited with many successful character transformations for amateur screen stars of Long Beach Cinema productions.

One of the advantages of working together in a group like this is that the individual amateur is able to make better pictures because of the assistance which other members are able to render; for any movie amateur knows what a task it is to try to make a serious film alone without understanding and competent help. Also, he invariably is able to use a wider range of equipment and accessories, owned by other members and usually pooled and made accessible to the club while production is in progress. Thus dolly shots, fades and dissolves and the use of sunlight reflectors are made possible, further enhancing his picture.

So well does the club's movie-making group work together that seldom is pro-

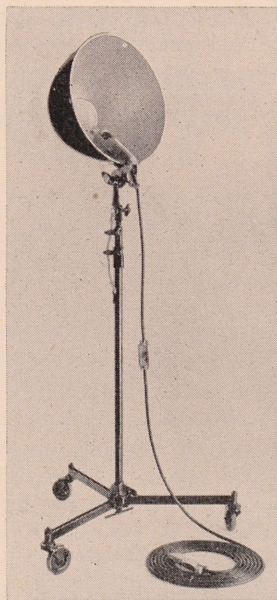


## "And the Villain Still Pursued Her"

OUR heroine is in a tough spot again. Ever since the first "flickers" were filmed, this little gal has been getting in front of locomotives, falling from skyscrapers, teetering on the brink of eternity. And ever since 1927 her perilous flights have been filmed for the Saturday serials with the aid of Mole-Richardson lighting equipment. During those 21 years, the Academy of Motion Picture Arts and Sciences have awarded five "Oscars" to Mole-Richardson Company for outstanding achievements in the field of photographic lighting.



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# Cine Kinks

## For Movie Amateurs

**FOR QUICK** focusing of movie films, after setting up projector, splice in two or three frames from a discarded title in middle of the film leader. Bring these before projector aperture momentarily to adjust focus. Prevents blistering your good film and your show will start off right with picture in focus.

**A WHIRLING** title can be made by mounting title card upside down on your phonograph turntable. Photograph it with camera upside down. Run camera long enough to read title completely, then start phonograph motor and let run for five seconds before stopping camera. When film is developed, turn end for end. Result: title will appear first spinning, then come to a stop, right side up.

**FADES** can be made with any 8mm. or 16mm. camera by closing down lens diaphragm. Trick is accomplished easily by making a control gadget that fits over lens diaphragm ring, as follows: Cut a narrow ring from a piece of pipe, slightly larger than diameter of lens. Drill and tap hole in edge to take small set screw. On opposite side, solder or braze a 3" length of welding rod for a handle. Slip over lens and secure by set screw.

**SPRING CLOTHESPINs**, numbered and arranged on a taut wire above one's editing table, afford simple means of holding film strips ready for editing and splicing.

**IF YOUR** 16mm. camera provides for making single frame exposures, you can make 16mm. slides, same as Leica and other 35mm. still camera owners. Mount frames in regular 2 x 2 slides, using appropriate masks made of thin cardboard. Screen slides with regular 2 x 2 projector.

**TO LABEL** your films, write or letter the title at beginning of white leader, then apply coat of clear nail polish over the lettering.

**A WAIST-LEVEL** finder for your cine camera can be made from a reflex finder salvaged from an old box camera. Mount it on a strip of sheet metal, and bend strip to form a clamp so it may be attached to top of your camera.

**LETTERING** titles by hand becomes easy when you use the inexpensive celluloid lettering templates on sale at stationery stores. Some dime stores have them, too.

duction delayed or postponed because one member chooses to play golf instead of responding to production calls on set or location. Recently, the club provided its members with white sweaters bearing the initials "L. B. C. C." on the back, to be worn when on location as a badge of membership in the organization. The appearance of the group shooting on location thus attired also gives them a certain measure of prestige and entree to shoot in otherwise restricted locales.

More recent interest has centered on Clarence Aldrich's sound on film productions, which are also a Long Beach Cinema Club project in that while his is the only sound camera employed on the productions, the cast and technicians are recruited from among the club's membership. Aldrich possesses an impressive array of sound equipment. Years ago he acquired one of the first R.C.A. single system sound cameras. This was known as the "Newsreel Model" and featured a small microphone built into rear of the camera. Inside was a galvanometer for recording sound on the film as the picture was photographed.

Over a period of time, Aldrich has improved the camera with a separate microphone, an improved recording head and a blimp which he designed and built himself. He has probably tested every known make and model microphone with

his equipment until today he has recording equipment that gives him near-professional results.

People gather around to watch whenever the club is on location, just as they do when a Hollywood studio is shooting pictures. The fact that it's an amateur production seems to make no difference, and frequently youngsters with autograph books in hand will gather around the "stars" asking for their signatures.

It goes without saying that Long Beach Cinema Club members have lots of fun making pictures this way, as well as turn out pictures with greater professional finish. Already, two of the founder members have advanced to professional picture making, due to the interest and experience gained by working with the group.

As for Aldrich, he has no professional aspirations. One time he screened one of his musical short subjects for a friend in Hollywood, who ecstatically called in a movie mogul to view the film. At conclusion of the showing the magnate arose and offered Aldrich a chance to produce commercial films in Hollywood.

Aldrich declined, saying, "This is my hobby. If I were making movies for a living, I'd be in it to make money, and that would spoil the fun." And besides, the Long Beach Cinema Club would lose one of its most enthusiastic amateur film producers. ★ ★ ★

## "SPECTRA" MEASURES COLOR TEMPERATURE

(Continued from Page 267)

of light, particularly the red and blue, are directly dependent upon the color temperature. If the color temperature is low the relative amount of blue rays will be low, and hence the reds and yellows will predominate due to the lack of the blues; if the color temperature is high, the relative amount of blue rays will be high and the light will take on a "whiter" appearance because of relatively lesser amounts of reds and yellows by comparison with the blue rays present in the light source.

White light is a combination of rays of all colors. If the color temperature is raised still higher, the relative amount of blue has increased so much in comparison with the amount of red and yellow rays present, that the light simply looks blue—and "degrees Kelvin" is the measuring stick of how many blue rays are in the light source by comparison with the red rays. The eye, being adaptable, is able to adjust itself to individual situations, and after a short time in any of the above color temperatures, objects will begin to appear normal. But film cannot do this, hence some mechanical means must be used to give the control we need for photography.

This control takes two forms: the first to be able to determine where we stand

with the composition of the rays in the light source; and the second to be able to do something about it. Standards had to be set and constants decided upon, and of course the first thing that must be regarded as a constant is the film itself, in the case of the three-layer single base films of which Kodachrome is an example. It was found that the optimum mean average color temperature of daylight is approximately 5900 degrees Kelvin, so the film was balanced for this value. Type A, for use with high-efficiency photoflood lamps exclusively was balanced for 3400 degrees; and the Commercial Kodachrome and the Type B were balanced for 3200 degrees, designed for use with standard studio lighting units. These values must be met as a pre-requisite to good color reproduction. If a disparity exists between the color temperature of the light sources and the values established for the film, something must be done: either the light source must be adjusted to meet this value, or a correcting filter used to compensate for the disparity. In either case some simple, reliable and accurate method must be used to measure the color temperature of the light from the light source.

An approach to the problem had been made with meters which employed pro-



cesses requiring the matching of color tones. This was not entirely satisfactory, since more often than not two people reading the same illumination (with a constant color temperature) would get two different results, and even the same individual reading the same illumination at two different times would get two different results. This, too, is the result of the adaptability of the human eye and its capability of adjustments which a mechanical device cannot make. The principal shortcomings of color temperature meters up to the present time, then, was that they depended upon the human eye to determine a match or a mismatch of color tones.

In the new Spectra direct-reading color temperature meter a simple, direct and positive approach is made to the problem. Simplicity and direct approach are essential to speed and accuracy under practical studio working conditions, and rule out any methods dependent upon the human element, such as matching sectors to delicate nuances in color tones, especially when fatigue, or even variations in individual responses, can influence the result.

The Spectra is basically a photo-electric cell whose output is fed to a microammeter, as in the case of photo-electric exposure meters. A red filter rests between the diaphragm (which controls the amount

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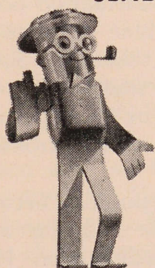
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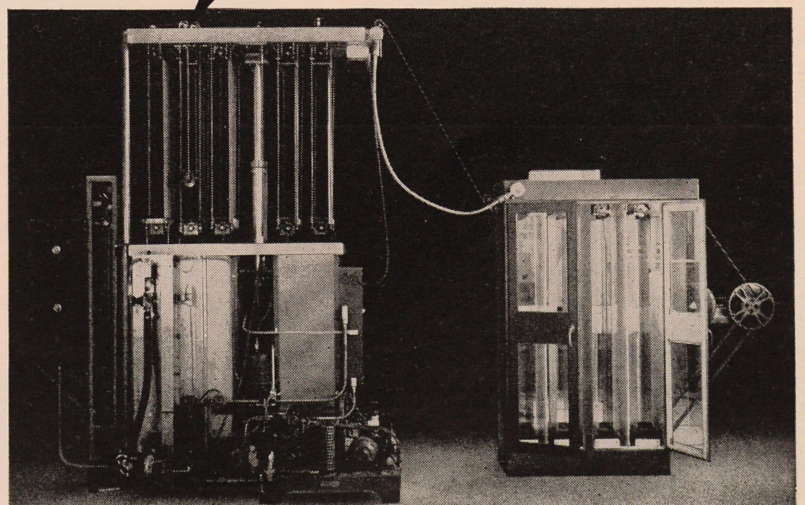
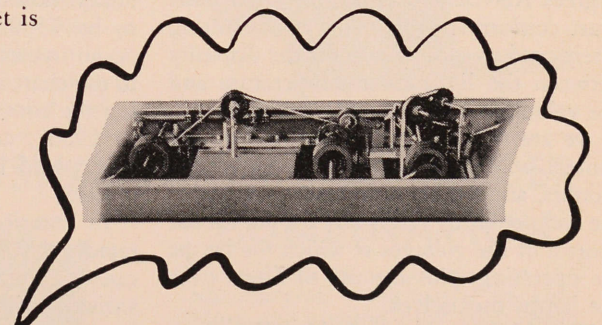


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of light entering the cell) and the cell itself. The scale of the microammeter is calibrated in degrees Kelvin. The meter is pointed at the light source and the diaphragm adjusted until the needle on the scale points to a reference marker, indicating a fixed amount of red rays striking the photo cell by virtue of the control by the diaphragm and the red filter. Then, with the meter resting in the hand, the trigger is squeezed with the forefinger, removing the red filter from in front of the photo-cell and replacing it with a blue filter. *The value to which the needle then points is a direct reading of the color temperature of the light being examined.* By reading the value with the blue filter in place over the photo-cell we have established a ratio between the amounts of blue rays going through the blue filter into the photo-cell to the red rays we were using as a basis for the measurement, and since we now know the relative amount of blue to red rays, we have satisfied the requirements for the measurement of the color temperature of the source. The meter is photo-electric in operation and eliminates all human element in its reading. *In actual operation, it is merely a matter of pointing the meter to the light source, adjusting the diaphragm to the reference marker, squeezing the trigger, and taking the reading directly from the scale.*

Now that we know where we stand, the next thing is to do something about it. Depending upon the color process used, we will be aiming for a color temperature of either 5900 degrees or 3400 degrees Kelvin, and either the light itself must conform to this value or correcting filters used to compensate for the disparity between the light color temperature and the value for which the film has been set. If we are working out of doors, the only control will be the compensating filters; indoors, and with incandescents, we have the compensating filters and the additional control of the voltages at which the lamps are operating, plus the use of filters over the lamps themselves.

The color temperature of the light outside can vary from a low of 2500 degrees either in the early morning or late evening when the sun is low, to a high of

around 20,000 degrees, which will be found when using a north skylight during a clear day and with no sun illuminating the subject, as would be the case if we were shooting in the shade of a tree of a building. As we pointed out earlier, the synthesis of light is readily apparent in its wide variations, but in dealing with color film we must pin ourselves down to a fine point—5900 degrees. If our light temperature is above this value the results will be too cold; if below it, results will be too warm; and a difference of 50 degrees, which go completely unnoticed in the original scene due to the adaptation of the human eye, will produce a noticeable deviation from the normal on the film—and in nine cases out of ten, meters using the human eye as a criterion for a match or mismatch will also miss the difference. While corrective control in the laboratory is possible in some color processes, this separation does not obtain with the three-layer single base films unless the color negatives are made from them. So we are left with the compensating filters as the only remaining means of control.

For use in conjunction with the Spectra the Photo Research Corporation furnishes a chart wherein the correction produced by every filter in both the Harrison and the Eastman Color Compensating series is given either upwards or downwards, as the case may be. For example, suppose we are using an emulsion balanced, for exterior work, for 5900 degrees. Upon reading the meter we find that the color temperature of the light at the time and under those particular conditions happens to be 7500 degrees, a common reading on an overcast day. We would then refer to the chart and pick out the filter indicating the correction downward from 7500° to 5900°, and this would be the filter that would be used over the lens of the camera.

In interior work deviation from the rated color temperatures of the lamps is caused by discoloring of the globes and by variations in the line voltage. Variations in color temperature beyond permissible tolerances can readily be brought on by relatively small changes in line voltage. If a uniform discrepancy in color tem-

perature exists the proper filter can be selected as outlined above. If an anomalous condition exists we will be aware of it *before* any film will have been exposed under electrical conditions impractical for photography.

We can also use voltage control as a means of color temperature control when incandescent lamps are used. The higher the voltage the hotter the filament will become, and the more blue rays will be radiated, hence the higher the color temperature. If a rheostatic or variac means of voltage control can be used, the disparity between the required color temperature and the actual color temperature can be removed by changing the voltage until the lamps read the required temperature. Application of this method in practical conditions will prove possible only in occasional situations, however.

Because of its spectral discontinuity, fluorescent lighting for color is not satisfactory.

The meter itself is used in the same manner as an incident light meter. Indoors, it is pointed directly toward the light being examined, and the diaphragm rotated until the needle comes to the reference marker, the trigger squeezed, and the reading taken. In use outdoors, a sphere is placed over the flat disc used for interior readings.

The reason for the use of the hemisphere is to take into account *all* the factors that affect the *effective* color temperature in an exterior scene. The factors that affect this value are the amount of sky illuminating the subject, the brilliance and the altitude of the sun, the amount of haze and clouds present in the sky, and the amount and character of reflected light present in the overall light picture. It works like a chess game, where any number of combinations of factors are possible with as many different results.

The reason the sky is blue is because of minute particles that are present in the air. If these particles did not exist the sky would look black, as it does to an observer in the stratosphere, where the air is so thin that very few particles are present. These particles also form nuclei around which condensation occurs and clouds form. The blue light we get from the sky (in places other than Southern California where the smog often won't let us see it) is caused by these particles scattering the blue rays coming from the sun.

There is a direct relationship between the size of the particle and the wave length of the light it will scatter. Haze in the air is caused by a formation of moisture around the dust nucleus, and as the size of this particle varies, the wave length of the light it will scatter will vary. As a matter of fact, if we were to illuminate a subject with pure sunlight

## EVERYTHING PHOTOGRAPHIC

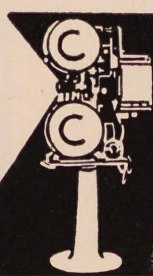
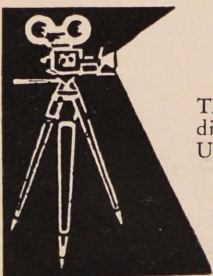
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around noon with no sky illumination, we would find the result photographed in decidedly warm tones. This is because of the scattering of the blue rays by these dust particles, the wave lengths of which are now missing in the pure sunlight.

A light measurement here would indicate a value in the neighborhood of 5400° Kelvin. It follows, then, that a wide variety of color temperature is possible as a result of different sky conditions and the different amounts of sky used as a part of the light source, all this in addition to the variations caused by the changing altitude of the sun. Actually, the reason the sun drops in color temperature with a lower altitude is because of the increased scattering of the blue rays brought on by the increased angle at which the sun strikes the particles, leaving less and less blues in the sun's direct rays until the sun becomes red when it is on the horizon.

Which brings us to reflections, plain and fancy!

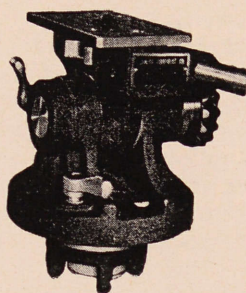
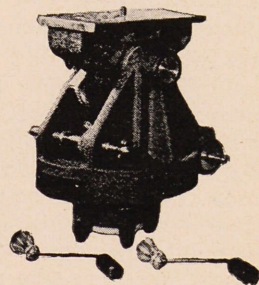
In a *specular* reflection, where the rays leave the reflecting medium much in the same form as they entered (such as reflections from water), we would find the basic color temperature unchanged. But it is where we have a *diffuse* reflection that things start happening. And most of the reflections are diffuse. If a large area of a given color is illuminated by the sun and an object is photographed nearby, the average color temperature of light illuminating this object will be found to be greatly affected. For example, if a person is photographed near a bright red building upon which the sun is shining brightly, the picture will be too warm in tone because of the lowered color temperature as a result of the reflection from the red building, unless something is done about it. The sphere on the Spectra does—it integrates the sunlight, the quality and the amount of skylight, and the reflections that affect the color temperature of the illumination and averages them out to give us an overall value that will be correct for the film. The Spectra meter is held at the subject position, pointed toward the camera, the reading taken, and the proper compensating filter chosen from the chart.

The point may be raised that the attenuation characteristics of the compensating filters vary with the different wave lengths of light. This is true, and for that reason each of the compensating filters was rated for 5900°, 3400°, and 3200°. As long as one of the values in the change-from-change-to-relationship is one of these constants, the amount of correction is one of the fixed values listed; and in direct color photography this is always the case. It is when both values are variable that an infinite number of corrections would be possible for any one filter. ★ ★ ★

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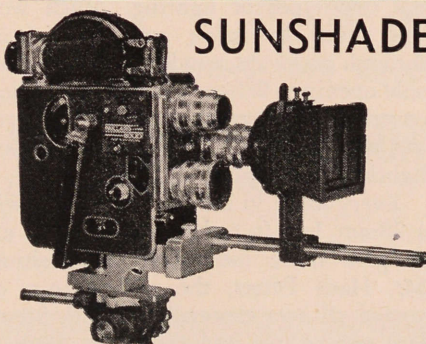
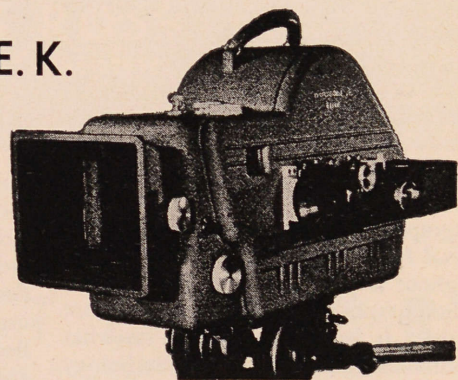


### FRICTION TYPE TRIPOD

Top plate handles 16mm. EK Cine Special with or without motor; 35mm. DeVry; B & H Eyemo with motor and 400' magazine; Speed Graphic or 8 x 10 View; and all 16mm. hand-held cameras. The removable head is interchangeable with the Gear Drive head. Both types fit “Professional Junior” standard tripod base, “Hi-Hat” and “Baby” all-metal tripod base.

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# BOOKS

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AN INTRODUCTION TO COLOR, by Ralph M. Evans. John Wiley & Sons, \$6.00.

Those who would work successfully with color in photography must understand the combined effects of the properties of colored light, the properties of vision, and the action of the mind in interpreting color. In non-mathematical text, the author divides his discussion into three sections: physics, psychophysics, and psychology. In the first he takes up the sources of light and the objects and substances that modify it. The second section deals with purely physical light, and in the third the author considers relationship between color and its perception by the human mind.

There are 304 illustrations of which 15 are full color plates. These alone are highly instructive, both for the professional and the amateur photographer. The author, a recognized authority in the field of color, is in charge of color quality control for all color processes at the Eastman Kodak Company, Rochester.

★

PROFESSIONAL PORTRAIT LIGHTINGS, By Charles Abel, A.R.P.S., Grønberg, Publisher, \$7.50.

Here is a book certain to find a place on the library shelf of the studio still photographer. Although it is entitled *Professional Portrait Lightings*, and emphasis throughout is placed on lighting basic to all photography, the book is far more than that. It is also a textbook on what professionals like to call "The Psychology of Handling the Sitter." Any lighting described in this book can be duplicated with any type or kind of equipment. The professional who wishes to perfect his craftsmanship will learn much between the covers of this book. It is amply illustrated with hundreds of photographs augmented by diagrams of the lighting setups used in making each picture.

★

WESTWARD HOW, by Fred Bond. Camera Craft Publishing Co., \$6.95.

Fred Bond, nationally known travel photographer knows the scenic West as few men do. He has driven more than 200,000 miles in the past ten years, crisscrossing the West from Canada to Mexico, and from the Rockies to the Pacific. In this book he gives the photographer the benefit of his vast camera experience, so that any traveling cameraist, using this book as a guide, may set out on a camera tour of the West and bring back good pictures of the most scenic spots. The book plots 21 planned camera tours and includes a supplemental route selector map.

## 'ACT OF VIOLENCE'

(Continued from Page 268)

downtown, near Commercial Street, Santa Fe freight yards, the Hill Street tunnel, Bunker Hill, and the Glendale railroad depot, and always with the city looming in the background. Other locations were shot at Big Bear Lake, and Santa Monica was utilized as the small California city. Actual homes, restaurants, bars and banks were used as the sets. Realism was the most important requirement in the staging of the film.

Naturally, such a story has more effect scenes, night exteriors and interiors than the average picture. Mood must be captured and maintained at all times. Yet utmost care was taken that each scene, shot by shot, kept a continuity of atmosphere that led into the following sequence. Also we were careful not to go too dramatic in any scene preceding a scene which called for great dramatic punch. In other words, we would not get hammy with the camera in scenes not requiring special treatment. This left us something for "punch" when it was needed later. Time of day was established by careful lighting, and for this extensive tests were made before the picture was in production.

Instead of just making a shot either day or night, we tried lighting the sets in a manner that would identify afternoon, morning, dusk or dawn. This is not too easy, and the technique used was either to project lights, using our standard lighting equipment, or by using reflected light, (see article on reflected lighting in October, 1947 issue.—Ed.) reflecting illumination on large silk surfaces and then into the sets. Many scenes were photographed by using a combination of the two types of lighting. Much work was saved by using reflected lighting through doorways, windows and any available opening. Where sets had low ceilings covering them completely, reflected lighting was a "must." There is no overhead lighting at any place in the picture.

Every scene in the film was made with a 28mm. lens in order to carry focus and to give more interesting compositions. Mr. Hans Peters, the art director, designed all sets especially for the 28mm. lens perspective and thus kept them all in fine proportion on the screen. At no time was any diffusion used before the lens on either long shots or closeups. We were fortunate in that the leading woman's role was played by Janet Leigh, a young and beautiful girl who photographs well without diffusion and who can take any kind of a key light.

The primary thought in lighting the sets was to light for the mood of the action, no matter whether it flattered or detracted from the actor's appearance.

Yet at the same time—differing from the technique followed in photographing many present day "realist" pictures—never did we distort our players' appearances to achieve an effect. They simply looked natural and like everyday people and not like familiar Hollywood actors. No make-up of any kind was used on any member of the cast. We tried to maintain on the screen a high standard of skin texture—no mask-like faces in a production of this type.

If a light source from a table lamp was actually photographed in the picture then the entire set was lighted from that direction. Since all the picture was played this way we had to have the lamps placed in the best location for the scenes before we started to shoot. Through the cooperation of Mr. Zinnemann, and by rehearsing the scene before we started to light it, it was possible to achieve natural lighting with utmost fidelity. If an actor stood between a lamp and the camera, we let him go black—just as it would appear in real life.

A higher than usual degree of contrast was employed in the lighting—broad or twin lights were seldom used. Sharp focus was maintained simply by lighting the individual shots sufficiently to be able to work at a lens stop which would carry whatever focus the shot required. At times this meant over-lighting an interior enough to stop the lens at F6.3 in order for the focus to carry. Then again quite a few scenes were made at F2. In such shots there were no depth of focus problems.

On exteriors, dawn effects were obtained by over correction with filters. Dusk scenes were filmed at dusk—with a few booster lights added for emphasis.

The tough problems arose when we started shooting night exteriors in the downtown streets of Los Angeles. It was extremely difficult to get background detail on the film when using only foreground action lighting. Street lamps aided immensely in this problem. We sometimes fastened photofloods to lamp posts a block away from where we were shooting, and aided thus, some very realistic night exteriors were obtained.

Shooting night sequences in a railroad yard proved a tough assignment because of the mechanical difficulties of running cable feeders to lamps across rails and tracks. At this location we had to get shots of an attempted suicide of a man jumping before an oncoming train, with the locomotive headlight supposed to be the only light source. Try this sometime. It was a challenging problem but it finally worked out successfully. Later, an entire scene was made showing the lights from



pullman coach windows flashing across the actors' faces. Such effects proved highly dramatic on the screen, and they could not easily have been secured without working with people who understand our difficulties and problems.

Mr. Zinnemann's background was especially conducive toward bringing about the close and effective working relationship we maintained. Years ago he and I had been fellow assistant cameramen at the EFA Studio in Berlin. Here, also, Zinnemann had been a close friend of Robert Flaherty, one of the pioneers in the field of the documentary films. They spent many hours over a period of months discussing the then "new" technique, later evidenced in Flaherty's "Nanook of the North," "Moana," and "Man of Aran."

It was Mr. Zinnemann himself who, in 1934, directed one of the first successful documentaries, the Mexican-made "The Wave," with Paul Strand, Director of Photography. He subsequently took almost identical "basic training" directing some of the "Crime Does Not Pay" series at M-G-M. By odd coincidence, his first feature film, "Kid Glove Killer," was a small-budgeted but documentary-type crime picture in which Van Heflin, one of the stars of "Act of Violence," received his first big break.

Mr. Zinnemann's knowledge of camera, and our fortunate ability to look at a scene together and see the same thing, expedited our work on "Act of Violence."

The picture was completed on schedule despite all the unlooked for problems, and this was possible only because all worked as a team—from the preliminary preparation to the final shot. It seems to me that a great deal of money could be saved by our studios if the Director of Photography were consulted in all budget meetings held before a picture goes before the camera. I fully believe that a big step towards real economy in the film industry would be made if the man responsible for the set operation of the crew, the Director of Photography, were assigned to a picture prior to the final draft of the shooting script. Thus he could suggest many shortcuts and money-saving devices which are never thought of until too late to put into execution. During the present economy wave in Hollywood many a picture is handicapped with an impossibly short schedule.

When filming falls behind schedule, the Director of Photography is blamed for being slow, because it is impossible for him to keep on schedule and at the same time turn out an even fair quality picture. The time comes when every cameraman asks: "When shall the Director of Photography be recognized as the most important cog in the *production* of a picture?" For it is he who, by virtue of ability,

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## 25 YEARS AGO

### With A.S.C. and Members

• GEORGES BENOIT bought a Mitchell camera, then took a leave of absence upon completion of filming "Trilby" for Richard Walton Tully in order to try it out on a personal filming venture.

• ROBERT DORAN, at the Hal Roach Studios, was shooting "What Should a Girl Do" starring Edna Murphy.

• ARTHUR EDESON and Phil Whitman were collaborating on the camerawork for Douglas Fairbanks, Sr.'s, "Thief of Bagdad."

• FRED JACKMAN returned from a location-scouting tour in the mountains of Colorado, in preparation for the production of a picture he was to direct for Hal Roach release.

• GILBERT WARRENTON was on location in Montreal, Canada, shooting for Cosmopolitan productions.

• ROBERT NEWHARD finished shooting "The Hunchback of Notre Dame," which was heralded as Universal's "greatest production to date." Newhard was receiving plaudits for his artistry as a result of screening of the rushes.

• JAMES VAN TREES completed photography on the First National production, "The Huntress," shooting the final scenes on location in the High Sierras.

• GEORGE SCHNEIDERMAN was assigned to film "Cameo Kirby" for Fox, which starred John Gilbert.

• RAY RENNAHAN, who was with Technicolor, was conducting an exhaustive search of various motion picture studios in an effort to locate a valuable tripod head that had disappeared from Metro Studios while he was shooting there.

• JOHN STUMAR was photographing "Wanted, A Home" at Universal, starring Baby Peggy and Sheldon Lewis and directed by King Baggot.

• PHIL ROSEN directed and Robert Kurrle and H. Lyman Broening photographed "The Dramatic Life of Abraham Lincoln," for the Rockett-Lincoln Film Co. Kurrle and Broening shot over 200,000 feet of film for the production.

• SOL POLITO, aided by Jackson Rose, was shooting important scenes at First National for Edwin Carew's production of "The Bad Man," starring Holbrook Blinn.

• JOHN DORED, with headquarters in Riga, Latvia, was shooting documentary and newsreel footage for various American film companies on special assignment.

artistry and imagination, imbues the production with the pictorial elements that make the picture click on the screen. It is only logical, then, to include him in the preliminary planning. One does not have to be bright to realize that the studios'

business is to make and sell a product—*motion pictures*. The Director of Photography is the one who makes the *picture*. Give him more respect and responsibility and the most progressive movement in our great industry will result. ★ ★ ★

## THE CAMERA'S POINT OF VIEW

(Continued from Page 273)

impression. It places the audience in an exalted position in reference to the players in the scene. Depending upon how the trend of the action develops, it can cause the audience to look at the players either with contempt or compassion—but in any case, the characters in that scene will appear humble to the audience.

Putting it into concrete terms, let's suppose that there is a sequence in which a man is being pursued by bloodhounds. If the action were filmed from the conventional eye-level angle we might not feel especially sorry for the man, because it is plain to see that he is bigger than the dogs. In our minds we assume that because he is the dominant figure in the scene, he will probably win out against the odds.

On the other hand, let's view the same scene from a high angle. Now the difference in size between the man and the dogs is less obvious. He becomes a hunted thing, nakedly exposed to the camera's commanding eye—and the audience is made to feel superior to him, in a compassionate sort of way.

The high angle, then, is used to best advantage when one wishes to make the audience feel superior to (or feel sorry for) the players in the screen situation. Aside from its psychological aspect, the high-angle shot gives a more comprehensive view of the situation, and creates a lofty perspective that is especially valuable in introducing a new locale.

*The Low-Angle Shot:* Departing from the conventional eye-level shot in the opposite direction, we find the low-angle to be one of the most dramatic points-of-view available to the cameraman. The basic effect of the low-angle is completely different from that of the high-angle, since it tends to *exaggerate* the importance of the subject which it portrays.

The low-angle forces the perspective of the scene, so that a character thus shown seems to be taller than he really is, and can be made to actually loom into the composition. For this reason he more or less dominates the audience psychologically and places it on the defensive. Thus, the low-angle shot is especially effective in sequences where a menace is to be portrayed, or where the influence of the character is to be built up for a particular reason of plot. Films with a sinister or mystery theme benefit especially from angles of this type.

In a sense, it can be said that a low-angle is an *intimate* sort of angle, because it often serves to bring the audience more completely into the atmosphere of the scene. Let us suppose, for example, that a character is shown fleeing from the police by crawling through some undergrowth. An eye-level angle of the scene would show the details of the scene quite clearly, but would inspire very little emotional reaction from the audience. On the other hand, if the same action were shot from a low angle, the fugitive would come crawling right up into the lens where the audience could see the terror in his eyes. It would be almost as if the spectators were in the actual locale with him, experiencing the same emotions.

Another function of the low-angle shot—and one which is quite effective—is that of pointing up the compositional importance of a commonplace static subject. A radio tower, for example, is just a radio tower when viewed from a straightforward angle—but shot from a low angle, it becomes an imposing monument of steel towering into the sky.

Oftentimes, by adopting a low angle, the cameraman can eliminate distracting backgrounds and show his subject to best advantage against the sky. Or, as a variation of this technique, he can create effective composition or symbolism by shooting the subject from a low vantage point against a dramatic background. In any event, the low-angle is a very striking point-of-view if used correctly—and not too often.

*Framing Your Scenes:* When a subject in a scene is framed by another object, a direct relationship is established between that subject and its locale. A house framed by trees, for example, is no longer just a house—but part of the landscape.

One of the most effective compositional devices which the cameraman has is the shot in which background subjects are framed by an object in the foreground. This type of shot gives added depth and perspective to the scene and tends to draw the audience into the action.

Photographically, such scenes are a bit more tricky to shoot, since they require a great depth-of-field if both planes of composition are to be rendered in acceptable focus. This means that a wide-angle lens should be used, with sufficient illumination to allow the lens to be stopped down as far as possible.



The framing of a scenic shot with a person in the foreground provides a fine measuring stick for size and distance. If the focus must favor one of the two subjects, it should usually be the one in the background, or the one that is the most important in the scene.

Point-of-view in movies depends greatly upon the *perspective* of the lens used—which, in turn, depends directly upon the focal-length of the lens.

The standard lens (1 inch for 16mm. cameras) produces a so-called *normal* perspective. That is, it covers practically the same angle of view as the human eye. It shows the subject clearly and without any exaggeration of line or proportion.

The wide-angle lens, on the other hand, forces the perspective of the scene, makes settings look larger than they actually are, exaggerates apparent distances, and allows for dramatic composition because of its inherently great depth-of-field.

The telephoto (or long focal-length) lens tends to flatten out the separate planes of the scene, while magnifying the subject. Because of its short depth-of-field, it is a fine lens for close-ups, since it throws distracting backgrounds out of focus.

These characteristics should be kept in mind when the selection of a lens is being made for a particular scene. The choice of lenses will have much to do with the point-of-view from which the scene is shown.

Let us suppose that you are filming a sequence in a long corridor and you wish to point up the setting itself. If you use your standard lens at eye-level, the scene will be photographed with normal perspective, and the corridor will be nothing more than an unobtrusive background for whatever action develops. But if you photograph the same scene from a low vantage point, using a wide-angle lens, the whole point-of-view of the scene will be changed. The perspective of the corridor will be forced so that it will appear to be twice as long as it really is. The lines of perspective will taper off to a distant point. The tilt created by the low angle will cause straight lines to lean just enough to give the setting a dramatic appearance. Figures in the scene will seem to loom forcefully into the composition. What was once an ordinary scene is now a dramatic, suspenseful situation. This sort of set-up, of course, should only be used when the mood of the story demands such an atmosphere—never just for the sake of novelty.

In most movie scenes, the camera becomes a spectator, detached from the action, recording what is happening from whatever vantage point offers the best view. But occasionally the camera adopts the viewpoint of one of the characters and we see a bit of the action as it looks

to him. In such a case we say that the camera is subjective.

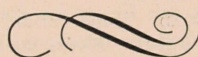
The subjective approach is just about the ultimate in "point-of-view," since it practically puts the audience in the other fellow's shoes. Through the personal eye of the subjective camera, we can see how the world looks to a man running through a forest, falling through space, or sitting on the floor. One or two very striking photoplays have been made using the subjective approach throughout. Many others have used it successfully in special scenes or sequences. Correctly motivated, it is one of the most dramatic devices the cameraman can employ.

In order to be most effective, the subjective shot must be clearly pointed up by the scenes that precede it. The audience must always know through the eyes of *which* spectator it is viewing the scene. This can be most definitely established by building up to a close-up of the character looking into the lens or just off-screen, and then cutting immediately to a shot of what he sees and how he sees it.

The most obvious use of the subjective treatment is to duplicate an unusual mental state such as intoxication or dizziness, but it can also be used for dramatic or comic effect. For example, suppose you have a sequence in which a tall man is shown talking to a child. The relative sizes of the two persons are first established by a straight-forward shot. Next, the camera adopts the viewpoint of first one, and then the other. The man is photographed from a low angle, as he would appear to the child looking up at him. Similarly, the child is photographed from a high angle to simulate the man's point-of-view. Immediately the extreme difference in size is pointed up.

The important consideration in the use of subjective shots is to make sure they fit into the story, are clearly motivated by the shots that precede them, and are not used too often. A subjective shot abruptly thrown into the sequence with no preparation or logical reason, calls attention to itself as a device and therefore detracts from the action.

Camera "point-of-view," in the final analysis, depends primarily upon the cameraman's choice of angle in a specific scene or sequence. In any event, he must match the viewpoint of his camera to the mood and pace of the story, select angles that clearly show the action, and show what there is to be shown in a fresh and original way. The possibilities are almost unlimited and the wise cameraman, be he professional or amateur, is the one who takes the time and thought to give his camera "point-of-view." ★ ★ ★



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# Current Assignments of A. S. C. Members

Members of The American Society of Cinematographers were engaged as Directors of Photography in the Hollywood Studios during the month of June, as follows:

## Columbia

- HENRY FREULICH, "Song of India," (Gibraltar) with Sabu, Gail Russell and Turhan Bey. Director, Albert Rogell.
- CHARLES LAWTON, "The Lovers," with Cornel Wilde and Patricia Knight. Director, Douglas Sirk.
- VINCENT FARRAR, "Triple Threat," with Gloria Henry and cast of All-American football stars. Director, Jean Yarbrough.
- REX WIMPY, "Smoky Mountain Melody," with Roy Acuff and Smoky Mountain Boys. Director, Ray Nazarro.

## Eagle-Lion

- WILLIAM H. GREEN, "The Big Cat," (Technicolor) with Lon McCallister and Peggy Ann Garner. Director, Phil Karlson.
- JOHN ALTON and GUY ROE, "Red Stallion of the Rockies," (Cinecolor) with Jeanne Heather and Arthur Franz. Director, Ralph Murphy.

## Independent

- GREGG TOLAND, "Enchanted," (Goldwyn-RKO) with David Niven, Teresa Wright and Evelyn Keyes. Director, Irving Reis.
- GEORGE BARNES, "The Numbers Racket," (Roberts Productions; Enterprise Presentation) with John Garfield and Beatrice Pearson. Director, Abraham Polonsky.
- ERNIE LAZLO, "Some Rain Must Fall," retitled "Cover-Up," (Strand Prod.-U. A.) with William Bendix, Dennis O'Keefe and Barbara Britton. Director, Alfred E. Green.
- JACKSON ROSE, "Bungalow," (Belsam Prod.-20th Rel.) with Tom Conway and Margaret Hamilton. Director, Edward L. Cahn.
- WINTON HOCH, "Tulsa," (Technicolor) (Walter Wanger Prod. for E. L. Rel.) with Susan Hayward and Robert Preston. Director, Stuart Heisler.
- KARL STRUSS, "Tarzan and the Arrow of Death," (Sol Lesser Prod.) with Lex Barker and Brenda Joyce. Director, Lee Sholem.
- ERNIE LAZLO, "The Lucky Stiff," (Amusement Enterprises—UA) with Dorothy Lamour and Brian Donlevy. Director, Lew Foster.
- LEE GARMES, "The Luckiest Girl in the World," (Enterprise) with Barbara Bel Geddes. Director, John Berry.
- BENJAMIN KLINE, "Miss Mink of 1949," (Wurtzel-20th) with Jimmy Lydon and Lois Collier. Director, Glenn Tryon.
- WILLIAM MELLOR, "Blondes Up," (Lester Cowan-UA) with Groucho, Chico and Harpo Marx and Ilona Massey. Director, David Miller.
- SOL POLITO, "If This Be My Harvest," (Bacher-SRO) with Valli and Robert Mitchum. Director, Irving Rapper.
- HENRY SHARP, "Strike It Rich," (Jack-Wrathier-AA) with Rod Cameron and Bonita Granville. Director, Lesley Selander.

## M-G-M

- CHARLES ROSHER, "Words and Music," (Technicolor) with Judy Garland and Mickey Rooney. Director, Norman Taurog.
- ROBERT SURTEES, "Act of Violence," with Van Heflin and Janet Leigh. Director, Fred Zinneman.

- JOSEPH RUTTENBERG, "The Bribe," with Robert Taylor and Ava Gardner. Director, Robert Z. Leonard.

- CHARLES SCHOENBAUM, "Little Women," (Technicolor) with June Allyson, Margaret O'Brien, Eliz. Taylor, Janet Leigh and Peter Lawford. Director, Mervyn LeRoy.

## Monogram

- HARRY NEUMANN, "Sheriff From Medicine Bow," with Johnny Mack Brown, Raymond Hatton, Evelyn Finley. Director, Lambert Hillyer.
- WILLIAM SICKNER, "Bowery Comeback," with the Dead End Kids. Director, Reginald Le Borg.

## Paramount

- DANIEL FAPP, "The Heiress," with Olivia de Havilland and Sir Ralph Richardson. Director, William Wyler.
- RAY RENNAHAN, "Streets of Laredo," (Technicolor) with William Holden, MacDonald Carey, William Bendix and cast. Director, Leslie Fenton.

## R-K-O

- ROBERT DE GRASSE, "Baltimore Escapade," with Robert Young, Shirley Temple and John Agar. Director, Richard Wallace.
- HARRY WILD, "Interference," with Victor Mature and Lucille Ball. Director, Jacques Turner.

## 20th Century-Fox

- JOE MACDONALD, "Yellow Sky," (Technicolor) with Gregory Peck and Anne Baxter. Director, William A. Wellman.
- ARTHUR MILLER, "Three Wives," with Jeanne Crain, Linda Darnell, Ann Sothorn and Jeffrey Lynn. Director, Jos. L. Menkiewicz.
- HARRY JACKSON, "Chicken Every Sunday," with Dan Dailey, Alan Young and Celeste Holm. Director, George Seaton.
- CHARLES CLARKE, "Sand," (Technicolor) with Mark Stevens and Coleen Gray. Director, Lou King.
- JOSEPH LA SHELLE, "The Fan," with Jeanne Crain and George Sanders. Director, Otto Preminger.

## Universal-International

- RUSSELL METTY, "You Gotta Stay Happy," (Technicolor) with Joan Fontaine and James Stewart. Director, H. C. Potter.
- ARTHUR EDSON, "The O'Flynn," (Fairbanks Co. Prod.) with Douglas Fairbanks, Jr. and Helena Carter. Director, Arthur Pierson.
- WILLIAM DANIELS, "Family Honeymoon," with Claudette Colbert and Fred MacMurray. Director, Claude Binyon.
- FRANK PLANER, "Criss Cross," with Burt Lancaster and Yvonne de Carlo. Director, Robert Siodmak.
- IRVING GLASSBERG, "Black Velvet," (Technicolor) with Anne Blyth and George Brent. Director, George Sherman.

## Warner Brothers

- PEV MARLEY, "Silver Lining," (Technicolor) with June Haver and Ray Bolger. Director, David Butler.
- TED MCCORD, "June Bride," with Bette Davis and Robert Montgomery. Director, Bretaigne Windust.

- WILFRED CLINE, "Fighter Squadron," (Technicolor) with Edmond O'Brien, Robert Stack and cast. Director, Raoul Walsh.

- KARL FREUND, "South of St. Louis," (Technicolor) (United States Prod.) with Joel McCrea and Alexis Smith. Director, Ray Enright.

- PEV MARLEY, "Night Beat," with Robert Douglas and Helen Westcott. Director, Elmer Decker.

- ROBERT BURKS, "The Fountainhead," with Gary Cooper and Patricia Neale. Director, King Vidor.

## 3000 FRAMES PER SECOND

(Continued from Page 269)

A 1/5-h.p., 32-volt universal motor is used to drive the film-moving mechanism, optical plate, and take-up spool. Overloading this motor up to 115 volts increases the speed beyond the normal range. This permits rapid acceleration and maximum speeds without damage to the motor since it is overloaded only for few seconds at a time.

Speed in frames per second is controlled by setting a stop on a builtin rheostat, mechanically coupled to the motor. To limit acceleration strain, this same rheostat, connected in series with the motor, applies a decreasing resistance as the motor comes up to speed and the pointer moves to the stop. At maximum settings, approximately 25 feet of film are required before the camera attains 80% of desired top speed. A motor shut-off switch dial cuts the current when the end of the film is reached and deceleration follows immediately.

In general, the speed at which the camera is to be operated is determined by the speed of the action pictured. Excessive taking speeds increase the problem of adequate lighting for the short exposures involved. A handy formula for computing camera speed is

$$\text{Frames per second} = \frac{40 \times \text{Subject Speed}}{\text{Width of Subject Field}}$$

when subject speed is measured in inches per second and subject field is measured in inches. This formula, however, is based on the assumption that the subject moves in a plane parallel to the plane of the film. Where subject motion is directed toward or away from the camera lens, lower speed may be adequate.

The actual speed of any given action photographed may be timed in absolute units. An argon lamp, connected to normal 115-volt 60-cycle, produces light impressions on the film edge denoting each 1/120 second.

A synchronization switch dial is provided to enable the operator automatically to make or break an external electrical circuit after a portion of the film has



been run. This is useful particularly when a given action is to be photographed only after the camera has attained a predetermined speed.

Standard loading for the Kodak High Speed Camera is a 100-foot roll of specially spooled 16mm. Cine-Kodak Super-XX Panchromatic Film. Where more exposure can be given, Cine-Kodak Super-X Panchromatic Film yields a finer image. In addition to these Eastman reversal films, Super-XX Panchromatic Negative Film may be used as can Kodachrome Film when ample light is available. Fifty-foot rolls of these materials are available on special order where 100-foot rolls are not needed.

Because of its light weight and compactness, the Kodak High Speed Camera has proved especially valuable in industry, both in design of high-speed equipment and in trouble shooting. Not only can the camera easily be transported anywhere in a shop, but—unlike flash discharge photography which must be carried out in subdued light—it may be used in normal room light or daylight and its picture cycle embraces a long enough period of time—1½ to 5 seconds—to depict the full cycle of the majority of high-speed industrial operations. Thus if a given part is malfunctioning the camera operator is assured that somewhere in his footage the failure will be recorded for study.

The importance of such visual studies cannot be overestimated. Industrial engineers and designers are constantly called upon to increase the speed at which machines and equipment may be operated. As a result, they need accurate knowledge of the time, space, and force relationships

which occur between parts that move too fast for visual observation.

Consequently, the Kodak High Speed Camera has been used to study such varied industrial problems as mechanical power transmission, metal cutting and forming operations, the flow of coolants in metalworking, effects of vibration, electrical arcing, aircraft behavior, fuel injection, the mixing of fluids, and metal flow in welding. This list is by no means exhaustive.

The solution of a typical industrial problem through use of this camera involved a machine embodying a ratchet feed that was continually out of service for replacement of the ratchet and pawl. Six times each second the pawl had to index a six-tooth 2¼-inch ratchet wheel with .01 second allowed for engagement. Neither ratchet nor pawl was standing up under this service.

Motion pictures taken with the Kodak High Speed Camera showed the pawl bounding off the ratchet tooth so that maximum force was exerted when the contact was small. Naturally this caused the corner to wear rapidly. A change in the pawl shape to reverse the rebound force eliminated the trouble.

While pictures of this type are primarily intended for engineering use, they often may prove useful in sales promotional films to illustrate a particular point about a machine or process. Incorporating such footage in promotional films provides visual proof of engineering claims and leaves the prospective purchaser convinced that parts operate as intended. Proof of this nature offers a sales argument of real force. ★ ★ ★

## TRANSITION LENS FOR TELEVISION

(Continued from Page 266)

as his automobile rolled up Pennsylvania Avenue toward him. Suddenly there was a renewed ovation from the crowds of spectators lining either side of the Avenue, and the President doffed his hat.

Walker instantly switched to his telephoto lens, capturing a well timed close-up of the President as he removed his hat and bowed, smiling, to the cheering throng. Years later a print of the reel containing this memorable footage was presented as a gift to the President's widow by the newsreel company.

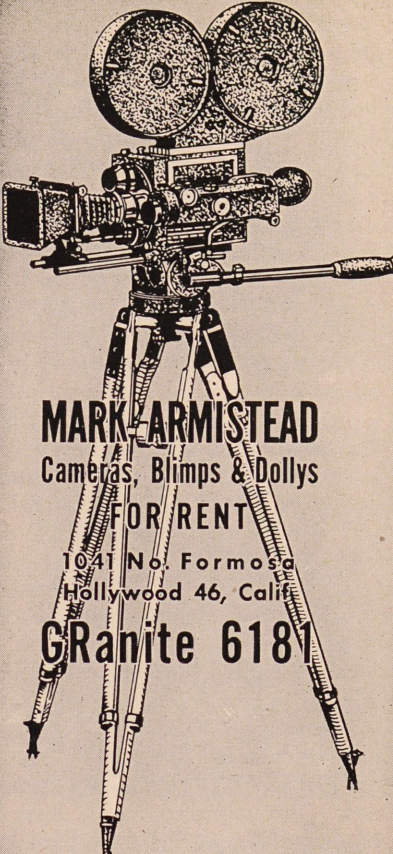
Subsequently, Walker continued his explorations with transition lenses, developing the automatic, multi-element zooming lens for both 35mm. and 16mm. cameras.

With the rapid development of television photography, the tele-camera and its peculiar problems attracted the attention of Joe Walker who makes it a point to keep abreast of every development in

photography—still, motion picture and video. He recognized the very same problems in television photography that had earlier beset the motion picture cameramen with the advent of sound.

In the early days of talking pictures, a lens was designed by Walker that would permit a quick transition from a long shot to a closeup, and vice-versa. It had two fields of view and was the forerunner of the present Duomar lens. The original transition lens was used recently to good effect by Orson Welles in Rita Hayworth's "Lady From Shanghai."

It became a simple matter for Walker to redesign this lens for the longer focal length and greater covering power required by the television camera. While modern television cameras have multiple lens turrets affording all the facilities of turreted motion picture cameras, actually the turrets are seldom used in making



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transitional shots during shooting. Instead, two or more cameras are used on the set or event—each operating with lenses of different focal lengths—and cuts between cameras are effected electrically by the operator at the camera control panels.

Earlier it was found that transitions made by swinging the television camera lens turret created a side motion of the entire picture image on the screen that was very disturbing to the eye. So those television studios fortunate to have the equipment, remedied this by using two or more cameras and cutting from one to the other, as prescribed in the script.

The answer to this problem, Walker foresaw, was a lens that would afford a quick change from long shot to closeup without creating any disturbing visual effect on the video screen. And as television's requirements, more often than not, were for a simple switch from long shot to closeup, or closeup to long shot—rather than a zoom effect—Walker's inventiveness enabled him to readily adapt his original two-image lens to television's needs. Subsequently the lens was appropriately tradenamed the Duomar.

The Duomar has two different fields of view. The movement of a lever by the operator changes the field from long shot to closeup, or vice versa, with a pleasing melding of the two scenes marking the transition, instead of the abrupt side motion "wipeoff" that occurs when the television camera's turret is employed for effecting transitions.

By moving the lever (indicated in photo by arrow No. 1) quickly, the result is an almost instantaneous "cut" from one field of view to the other. If the lever is moved moderately slow, a dissolving effect is obtained between the two.

Unlike the continuous zoom lens, of which Walker has made several for use in motion picture photography, the Duomar can be made in any lens speed and with a very high degree of optical correction. Speeds of  $f/2$  have been found quite practical; however, in large television studios the speed of  $f/4$  is sufficient for practically all purposes. Moreover, size and weight of the lens must always be considered. The faster the lens, the larger it must be.

The Duomar lens pictured here is 12 inches in length and the image range is between that of 8 and 16 inches focal length. The lens requires a lightweight bracket to support it before the camera. The bracket shown in the illustration is made of aluminum and is held in place by an extension which fits between the camera and the tripod head.

The Duomar is not an auxiliary lens. It replaces the regular television camera lenses. The range of the transition is pre-set by adjusting two collars mounted on a shaft paralleling the lever opening.

Early tests of the Duomar lens on the "Queen For A Day" and "Heart's Desire" video shows revealed that, in addition to operating the lens lever, the operator also had to adjust his camera simultaneously in order to keep the lens centered vertically on the scene or subject. Walker soon corrected this and now centering becomes automatic, the range of the centering action being pre-set by adjusting a small knob immediately below the front of the lens, indicated by arrow "2" in lower photo on page 266.

The Duomar lens is fully patented. Harry Lubke, director of Television for Don Lee, and his video cameraman Hermas Smith were the first to employ it. Walker is making the lens available to any television company for experimental or regular program use. ★ ★ ★

## GRAND OPERA IN 16MM.

(Continued from Page 274)

have the additional interpretive faculty of English dialogue and the freshness and realism of screen presentation to simplify opera for every type of audience.

On the screen, the arias are sung in the native tongue of the original opera. The dialogue which precedes an aria is spoken in English and thus fully explains and sets the scene; the aria continues the mood.

Although this film marks grand opera's first "adaption" to its new medium, Maestro Peluso says that it was not necessary to alter the original music or arias in any way, except for some of the lengthier musical compositions, which were shortened to allow for more explanatory dialogue. But the essentials of the plot and music were not changed in the streamlining given the screen production.

The musical score and arias were pre-recorded by Metropolitan Opera star Emily Hardy, Frank Travaglione, Giovanni Zavatti and conductor Peluso. Those essaying principal roles on the screen sang and spoke their lines in accompaniment to playback of the original recording, but this was not recorded. The pre-recorded musical score and arias were dubbed in.

Although this was a 16mm. film production, it was handled in the most professional 35mm. manner. Both the technicians and cast were recruited from among regular studio workers. The casual observer accustomed to watching typical Hollywood studio production methods would hardly have noticed any difference in the procedure, except when the camera blimp was raised to reveal within it a Mitchell 16mm. Professional camera instead of the familiar Mitchell 35. Since this camera is almost identical in design and operation to the 35mm., it presented no difficulties to our 35mm. camera operator. ★ ★ ★

## MUSIC FOR MOVIES

(Continued from Page 270)

against such music because it happens to have been written as accompaniment for screen drama.

Composing and recording background scores is a highly specialized and rather intricate business. Heading the musical department of each studio is a musical director who supervises the creative efforts of anywhere from eight to twenty composers, arrangers and directors. It is his task to assign various pictures to individual composers and to work with them in developing themes and orchestrating completed scores. Occasionally the musical director personally composes the score for an important picture, and quite frequently several specialists work together on a single score. One may write the score, another will arrange it for the orchestra, and still another will conduct the orchestra in actual recording of the music.

Although scoring procedures vary somewhat with particular studios, the basic techniques are similar. Usually the composer writes his themes while the picture is still on the sound stages or in the cutting room. When the picture is completed, every scene, action and bit of dialogue is accurately timed by a mechanical device, and the composer begins the operation of fitting his music reel-by-reel to the actual content of the film. Elaborate cue sheets enable him to precisely synchronize musical ideas to the celluloid.

The recording is done a reel at a time on the recording stage. The conductor rehearses a large symphonic orchestra repeatedly, while watching the picture projected on a screen at the back of the stage. After several rehearsals a cutting of that portion is made, and as soon as one reel is okayed, the conductor goes on to the next. The utmost precision is needed to get the music to closely match the picture.

Max Steiner, regarded by many as the industry's foremost musical director, has evolved his own highly successful formula for film scoring. He maintains that "the ear must hear what the eye sees," and with this in mind he asks himself, when viewing a completed picture for the first time, "What does it sound like?" He then analyzes the main characters and situations of the story and composes a representative theme for each.

These themes are then turned over to a timing expert who writes out intricate cue sheets to match music with action. Mr. Steiner frequently composes what is known in the trade as "Mickey Mouse Music." More clearly defined, this is the kind of music that closely follows the action of the characters. If a player runs upstairs, the music does likewise—if he falls down, the music takes a tumble, also.

When this specialized timing is done, the composer then completes the transi-



tions and interludes for each reel, after which the score is turned over to the orchestrator to be arranged for recording. Mr. Steiner works closely with the arranger to make sure the desired instrumentation is created. He also sits in on the re-recording session (during which music is "mixed" with dialogue and sound effects) in order to more closely control the volume and modulation of the music in relation to the other sound elements.

Max Steiner has thrice won Academy awards for his scoring of "The Informer," "Now Voyager," and "Since You Went Away." His other outstanding scores include: "Gone With the Wind," "Sergeant York," "Casablanca," "Mission to Moscow" and "Saratoga Trunk." His brilliant score for the motion picture, "She," has been given many concert performances by leading symphony orchestras. Mr. Steiner's musical themes are so melodic that several have been published as popular songs, notably the themes from "Now Voyager" and "Saratoga Trunk." He is one of the foremost proponents of background scores as music worthy of the concert hall.

Commenting on the aforementioned controversial issue, Mr. Steiner says: "A major victory was won when producers came to realize that the score should not always be completely subordinate to the story. Formerly, it was unheard of that a scene should be lengthened so that a musical idea might be more effectively developed. Now, if I need ten more feet of action to complete what I have in mind I can usually get it. That is a definitely encouraging sign." ★ ★ ★

## INFRARED FILM

(Continued from Page 265)

"chalking" of the features. In "Fort Apache," no makeup of any kind was used except in the infrared shots.

The shades of brown makeup will vary with the filter used, which should be a 23A, 25A, and, rarely, a 29F. Choice of filter will depend entirely on the background, sky and clouds. In several instances I used a 23A filter and then shot the scene to follow using a 29F filter, and succeeded in maintaining a balanced density in both long shot and closeup.

In using only the red filters it is well to remember that all reds in the scene are consequently highlighted in color and with a corresponding degree according to the filter used. All props normally containing red, such as flags, insignia, etc., should be replaced with duplicates in which the red colors have been replaced by light or medium brown, and the filters for the shot carefully selected.

In balancing connecting shots, the sky should also come in for careful evaluation in the selection of filter to be used for

long and close shots. A ground haze can cause serious trouble if shot in a back-light or back cross light. Where haze prevails, a few test shots developed on the spot, will indicate the best filter to use, and at the same time convince you of the value of infrared film for getting dramatic pictorial effects that would not be possible under the same conditions with any other emulsion.

For the 16mm. movie maker, amateur or professional, infrared film offers many possibilities, both pictorial and timesaving. Where the filmer has not the lighting facilities to photograph actual night shots, infrared and filters will enable him to photograph such shots in daylight. The 16mm. professional will find many uses for the film to enhance production values—something he can easily prove by making a few test shots.

There is no definite emulsion speed indicated for infrared film for use in daylight. Only last month, I contacted Eastman's representative, who was visiting in Hollywood, and could get no definite information regarding this.

In checking my exposures, made during the past few years with this film, I established the following exposure table:

Exposure Meter	Reading	Filter Used	Exposure
General Electric	150 Foot Candles	25A	F/6
General Electric	150 Foot Candles	23A	f/8
General Electric	150 Foot Candles	29F	f/3.5
Norwood Director	250 Foot Candles	25A	f/6
Norwood Director	250 Foot Candles	23A	f/8
Norwood Director	250 Foot Candles	29F	f/3.00

—all of which indicates an emulsion speed of 8 for the film. This may vary greatly, however, depending upon the color of backgrounds and the density desired; so actual tests under given conditions, coupled with past experience should be your safest guide.

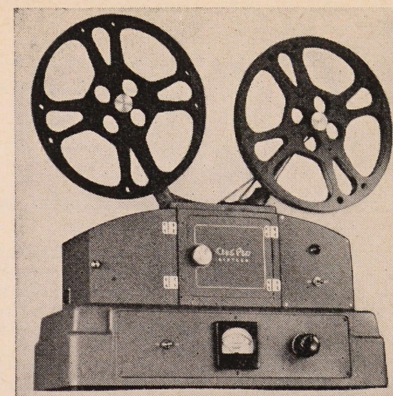
For the successful use of infrared film in photographing "Fort Apache," considerable credit is due director John Ford; for without his understanding, cooperation and assistance, the dramatic pictorial shots that mark the picture would not have been possible. Indeed, Ford was as eager as I to use the film and to leave nothing undone to insure the greatest possible results from it.

## BULLETIN BOARD

(Continued from Page 260)

reveal details of the new film treatment, two film strips were screened for the group, one shot under normal conditions and the other deliberately under-exposed by one full stop and then subjected to the new process. Both strips screened with identical results.

S.M.P.E. reports that Czechoslovakia's film industry has established a new standard projection speed of 25 frames per second for 35mm. sound film.



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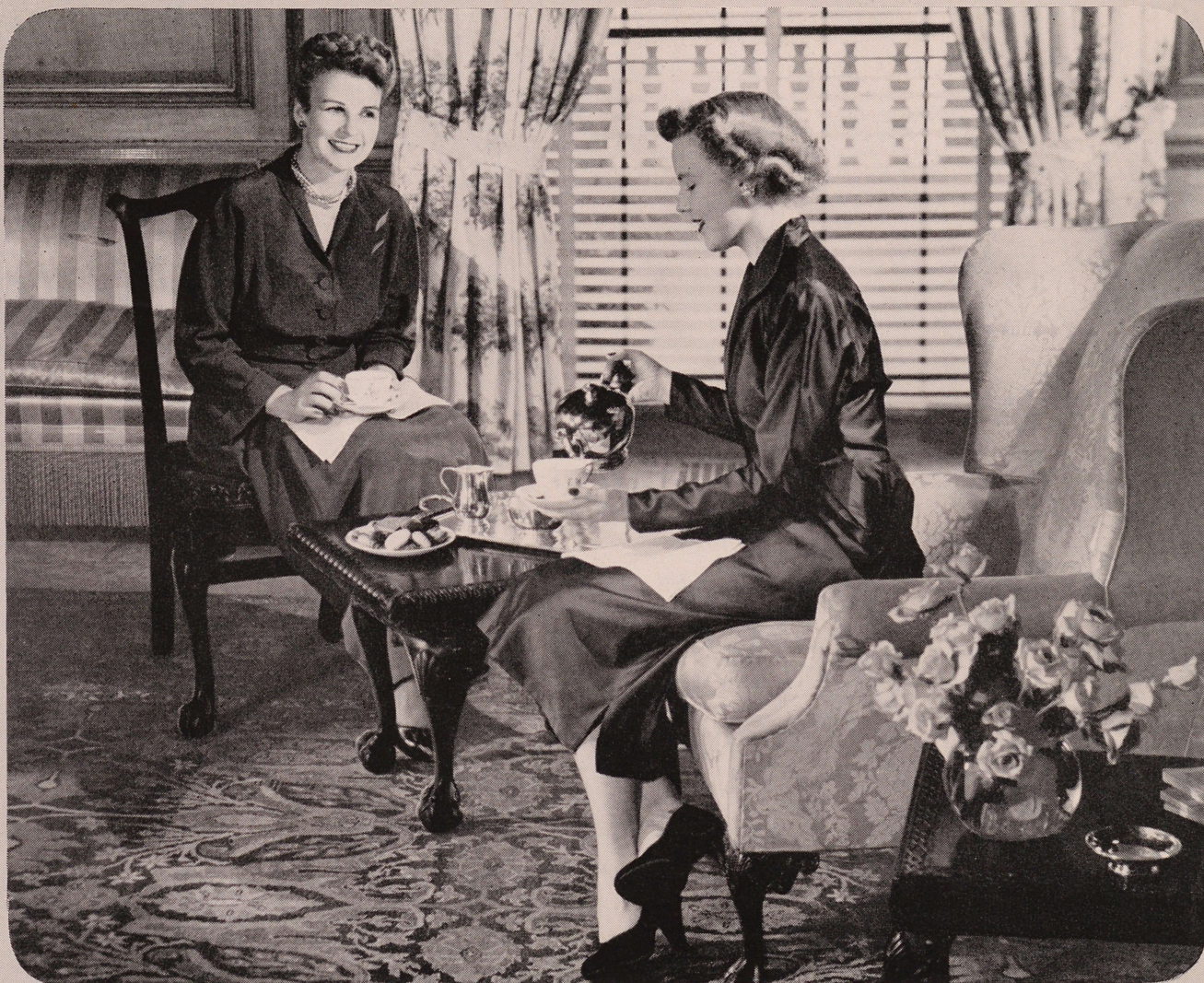
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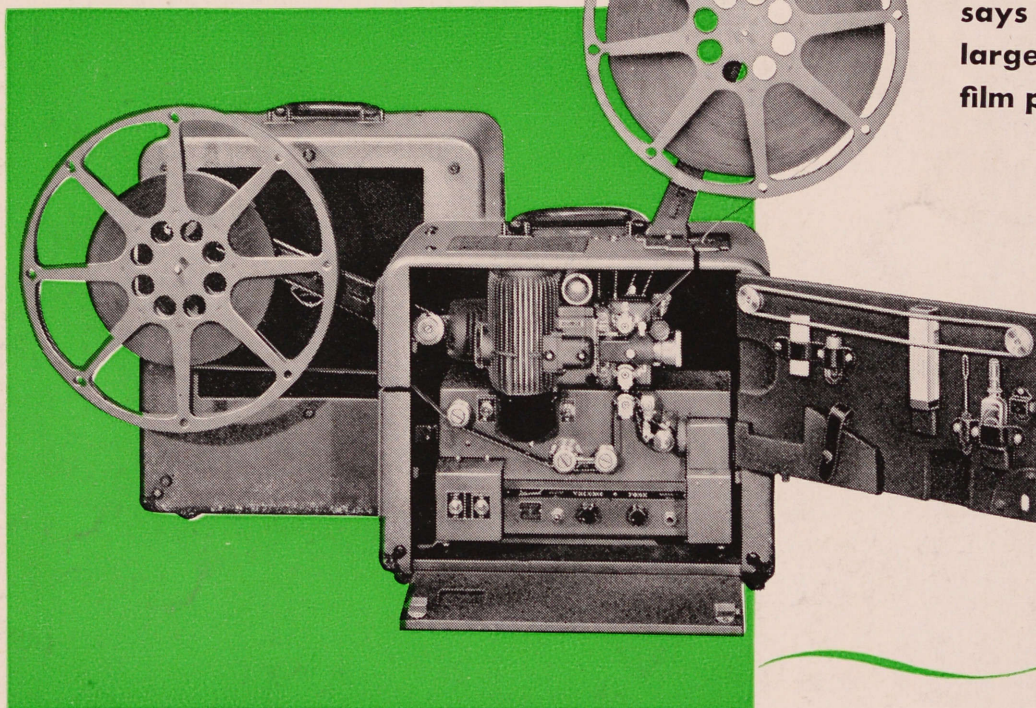


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